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**CLOSURE PLAN INFORMATION AND DATA
FOR THE DRUMMED HF
RESIDUE/ASSOCIATED STORAGE AREAS NW
OF PLANT 4**

06/24/93

**DOE-FN/OEPA
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REPORT**

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CLOSURE PLAN INFORMATION AND DATA
FOR THE
DRUMMED HF RESIDUE/ASSOCIATED STORAGE AREAS NW OF PLANT 4

Revision 1
June, 1993

Fernald Office
U. S. Department of Energy
Fernald Environmental Management Project
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A	DRUMMED HF RESIDUE/ASSOCIATED STORAGE AREAS NW OF PLANT 4 RCRA CLOSURE SAMPLING AND ANALYSIS PLAN (SAP)
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C	PHOTOGRAPH DELINEATING HWMU BOUNDARY
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CLOSURE PLAN INFORMATION AND DATA FOR THE DRUMMED HF
RESIDUE/ASSOCIATED STORAGE AREAS NW OF PLANT 4
U. S. Department of Energy, Fernald Office
Fernald Environmental Management Project
Fernald, Ohio

1.0 INTRODUCTION

1.1 Purpose

This Closure Plan Information and Data (CPID) is being submitted to close the inactive Drummed HF Residue/Associated Storage Areas NW Of Plant 4 Hazardous Waste Management Unit (HWMU), hereinafter referenced as HWMU No. 7. The closure of HWMU No. 7 is a partial closure of the Fernald Environmental Management Project (FEMP) under the Resource Conservation and Recovery Act (RCRA). Consistent with OAC 3745-66 (40 CFR 265 Subpart G) and the State of Ohio Proposed Amended Consent Decree, CIVIL NO. 81-86-0217 (PACD), this document describes the activities that will be conducted to complete RCRA closure of HWMU No. 7. It is the intention of FEMP management to implement this CPID to demonstrate RCRA closure of HWMU No. 7.

The FEMP management must ensure integration of all RCRA closure activities with required Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response actions at the FEMP. This CPID has been prepared to ensure RCRA closure actions, conducted pursuant to requirements imposed by the Ohio Environmental Protection Agency (OEPA), are consistent with the terms of the September 20, 1991 U.S. Department of Energy (DOE) and U.S. Environmental Protection Agency (USEPA) Amended Consent Agreement.

A copy of this CPID, along with any subsequent revisions, will be maintained at the site until final FEMP facility closure.

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The FEMP is a DOE owned facility located on 1,050 acres in a rural area approximately 18 miles northwest of Cincinnati, Ohio. The property is located in Ohio, primarily in Hamilton County with the northern section extending into Butler County. The villages of Fernald, New Baltimore, Ross, New Haven, and Shandon are all located within a 5 mile radius of the plant (Figure 1).

The FEMP was formerly operated as the Feed Materials Production Center (FMPC) for the purpose of producing metallic uranium fuel elements, target cores, and other uranium compounds in support of the U.S. defense program. The former production area was limited to an approximate 136 acre tract near the center of the site. The facility was in operation at this site from the early 1950s until production ceased in July 1989. In February 1991, the DOE formally notified the U. S. Congress that all production missions at the FEMP had ceased and the facility is being closed.

In 1986, the DOE initiated the ongoing Remedial Investigation/Feasibility Study (RI/FS) to evaluate and determine remediation requirements pursuant to CERCLA. In November 1989, the USEPA added the FEMP site to the National Priorities List (NPL) of hazardous waste sites. Consistent with the scope of NPL and the Consent Agreement, RCRA closure activities and any resulting changes to facility schedules must be coordinated and integrated with the RI/FS and CERCLA removal and remedial response actions.

PLANT 4, ALSO KNOWN AS THE GREEN SALT PLANT, PERFORMED THREE PRINCIPAL OPERATIONS IN THE OVERALL PROCESS OF PRODUCING URANIUM METAL AT THE FEMP. THE THREE OPERATIONS PERFORMED IN PLANT 4 WERE THE CONVERSION OF ORANGE OXIDE (UO_3) TO URANIUM TETRAFLUORIDE (UF_4 , ALSO KNOWN AS "GREEN SALT"); THE BLENDING AND PACKAGING OF DEPLETED GREEN SALT FOR THE METALS PRODUCTION PLANT; AND THE OPERATION OF THE TANK FARM TO SUPPLY PRODUCTION PLANTS WITH BULK QUANTITIES OF REQUIRED LIQUID CHEMICAL COMPOUNDS.

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THE UO_3 FOR CONVERSION TO UF_4 WAS EITHER PRODUCED IN PLANT 2/3 OR RECYCLED FROM DOE REACTOR SITES. UO_3 WAS CONVERTED TO URANIUM DIOXIDE (UO_2 OR BROWN OXIDE) BY REDUCTION WITH HYDROGEN. THE UO_2 THEN REACTED WITH ANHYDROUS HYDROGEN FLUORIDE TO FORM UF_4 .

GREEN SALT PRODUCTION WAS A TWO-STEP PROCESS IN WHICH UO_3 WAS REACTED WITH DISSOCIATED URANIUM TO FORM UO_2 . THE UO_2 WAS THEN HYDROFLUORINATED IN A REACTION WITH ANHYDROUS HYDROFLUORIC ACID (AHF) TO FORM UF_4 . UO_3 RECYCLED FROM DOE REACTOR SITES WOULD UNDERGO DOUBLE PASS PROCESSING TO ACHIEVE HIGH YIELDS OF PRODUCT UF_4 . THE UF_4 PRODUCT WAS THEN WEIGHED, BLENDED, SAMPLED FOR CHEMICAL ANALYSIS, PACKAGED IN 10-GALLON CANS AND SHIPPED TO PLANT 5 WHERE THE GREEN SALT WAS MIXED WITH MAGNESIUM TO PRODUCE URANIUM METAL DERBIES IN A FURNACE REDUCTION PROCESS.

THE TANK FARM AREA FACILITIES PROVIDED FOR UNLOADING, STORING AND TRANSFERRING ACIDS, BASIC SOLUTIONS AND SOLVENTS THROUGHOUT THE FEMP. FACILITIES WERE ALSO PROVIDED FOR STORING AND UNLOADING BY-PRODUCT HF SOLUTION AND FOR MANUFACTURING AMMONIUM HYDROXIDE FROM ANHYDROUS AMMONIA.

1.3 Regulatory Impacts and Exemptions

RCRA closure activities at the FEMP are impacted by other regulatory requirements and negotiated legal agreements between the DOE and other Federal and State agencies. The following sections discuss regulatory and legal constraints and exemptions applicable to the FEMP that may affect the conduct of RCRA closure activities.

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1.3.1 Mixed Radioactive and RCRA Wastes

Most FEMP wastes that are listed or characteristic hazardous wastes are handled on-site as mixed radioactive and RCRA hazardous wastes. The radioactive portion of mixed (RCRA hazardous combined with radioactive) waste is not regulated under RCRA. Determination of the radionuclide component of most material on-site is based upon analysis to assay the uranium content of the material. For some materials, assay values are based on prior sampling of the same or similar materials, or upon process knowledge. In cases where assay values have not been established, the FEMP considers materials generated in the uranium processing area to be radioactively contaminated. This determination is based upon process knowledge, experience in uranium production operations, and the fact that de minimis concentrations or below-regulatory-concern (BRC) levels for radionuclides have not been established for the wastes in question.

DOE will inform OEPA of the results of radiological sample analyses obtained during the closure of HWMU No. 7. Sampling and analyses to support closure activities will be performed in accordance with the Sampling and Analysis Plan (SAP) provided in Attachment A, and with existing FEMP/FMPC Standard Operating Procedures for management of activities and materials involving radiation hazards.

Recognizing the dual nature of these wastes, the FEMP stores mixed wastes in accordance with RCRA regulations as well as DOE orders concerning low-level radioactive waste. DOE orders are requirements that govern the conduct of operations at DOE sites. DOE orders apply both to DOE personnel and contractors employed at DOE sites. Based on the current lack of national capacity for treatment and disposal, mixed wastes are being stored on site pending the availability of acceptable mixed waste treatment or disposal facilities, or until final remediation under the CERCLA Record of Decision (ROD) process.

1.3.2 Integration of RCRA Closures With CERCLA Response Actions

Since the FEMP has been added to the NPL on November 1989 for remediation under CERCLA, RCRA closures at the FEMP will be integrated with CERCLA response actions. In accordance with 40 CFR 300.400(g), CERCLA response actions must identify all other Applicable or Relevant and Appropriate Requirements (ARARs), unless justifiably waived, including OEPA and USEPA requirements for HWMU closures. Pursuant to the Consent Agreement, the FEMP management will:

- Characterize chemical and radiological contamination at the FEMP and establish site cleanup objectives.
- Conduct necessary short-term response actions to eliminate or minimize immediate threats to human health and environment.
- Implement any necessary long-term monitoring and surveillance of the facility and surrounding environment.

Consistent with the terms of the Consent Agreement, the FEMP RI/FS has divided the site into 5 Operable Units (OUs). The closure of HWMU No. 7 is included within the scope of Operable Unit 3 (OU 3) which covers FEMP production areas and production-associated facilities and equipment and OU 5, which covers environmental media. Based on the RI/FS, a Proposed Plan (PP) will be recommended for the CERCLA ROD for each of the 5 OUs. The ROD will specify the required final remediation or removal of contaminated media, equipment and structures. Remedial Design/Remedial Action (RD/RA) plans will be prepared to implement the requirements of the RODs and accomplish final remediation for each of the Operable Units.

CHARACTERIZATION OF MEDIA CONTAMINATION ON A SITE-WIDE BASIS IS BEING EVALUATED UNDER THE OU5 RI/FS. THE FINAL CLEAN UP LEVELS WILL BE DETERMINED THROUGH THE CERCLA PROCESS. UNTIL THE FINAL REMEDIATION UNDER THE ROD FOR OU5, REMOVAL ACTION NO. 17 PROVIDES FOR THE IMPROVED MANAGEMENT OF SOIL AND DEBRIS.

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BASED ON APPROVALS FROM BOTH THE OEPA AND USEPA, REMOVAL ACTION NO. 17 IS BEING IMPLEMENTED IN TWO PHASES. PHASE I ENCOMPASSES SOIL AND DEBRIS MANAGEMENT DURING THE DESIGN AND CONSTRUCTION OF FOUR PROPOSED STORAGE FACILITIES. PHASE II ADDRESSES SOIL AND DEBRIS MANAGEMENT FROM THE TIME THE FACILITIES ARE CONSTRUCTED UNTIL FINAL REMEDIAL ALTERNATIVES FOR FEMP ARE SELECTED. REMOVAL ACTION NO. 17 PROVIDES SPECIFIC CRITERIA FOR THE MANAGEMENT OF SOIL AND DEBRIS CONTAMINATION AND IDENTIFIES OPTIONS FOR ITS DISPOSITION INCLUDING DECONTAMINATION, DISPOSAL OFF-SITE, OR STORAGE IN CONTROLLED STOCKPILES OR AN IMPROVED STORAGE FACILITY. IF CONTAMINATED SOIL IS IDENTIFIED DURING THE CLOSURE OF A HWMU, IT WILL BE MANAGED IN ACCORDANCE WITH REMOVAL ACTION NO. 17.

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1.3.3 Financial and Liability Exemptions

The FEMP is a federally owned facility. According to OAC 3745-66-40 C (40 CFR 265.140(c)), the federal government is exempt from the financial requirements of OAC 3745-66-40 through OAC 3745-66-48 (40 CFR 265 Subpart H).

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2.0 SUMMARY OF HWMU INFORMATION

2.1 Waste Management Unit Description

HWMU No. 7 was used for container storage and is located northwest of Plant 4 (see Figure 2 and attached photographs). This HWMU, is an open gravel area and was not designed for the purpose of hazardous waste storage. It should be noted that the HWMU determination was not completed until after the wastes had been removed from the area. Since it was not operated as a HWMU, the operating documentation required for an active HWMU was not maintained.

This HWMU is a 25 ft. wide by 30 ft. long gravel area located outside of Plant 4 (see Figure 3) bounded by B street, on the west and by 2nd street, on the north. The boundaries of HWMU No. 7 were delineated based on photos (SEE ATTACHMENT C) and interviews with personnel that worked in the area. The topography of HWMU No. 7 is relatively level and the area is unpaved (gravel base). The area boundaries were defined to encompass the area where the drums had been stored in 1990. Figure 4 is a plan layout of the unit. The HWMU boundaries shown in Figure 4 have been delineated in the plant area by yellow plastic chain and warning signs.

The gravel area designated as HWMU No. 7 was inspected in conjunction with the preparation of this CPID. There is no evidence or records of spills or releases from this unit.

2.2 Waste Inventory

The only hazardous waste known to have been stored in the area identified as HWMU No. 7 were nineteen (19), 55 gallon drums of anhydrous hydrofluoric acid (AHF) residues. These nineteen (19) drums were overpacked into three white metal boxes of six (6) drums each and one (1) drum into an 85-gallon overpack drum and were stored in HWMU No. 7 from January through August 1990. The drummed AHF residues had been generated in 1989 when the storage tanks located in the Tank Farm were

emptied and cleaned. The tank wastes consisted of liquid AHF, lime and sludge remaining in the tank after draining. The sludge contained rust, scale, and AHF residues. During removal from the tank, lime was added to the residue to absorb any free liquids and also to neutralize the remaining acid and the resulting waste stream was placed into nineteen (19) drums.

In January 1990, the AHF waste residues were determined to be nonhazardous because they were not characteristic for RCRA corrosivity or toxicity under OAC 3745-51-20 to 3745-51-24 and (40 CFR 261.20 to 261.24). THIS DETERMINATION WAS BASED ON PROCESS KNOWLEDGE AND AN EVALUATION OF EP TOXICITY ANALYTICAL RESULTS. A COPY OF THE ANALYTICAL RESULTS IS PROVIDED IN ATTACHMENT D. However, in October 1990, it was determined that the waste stream originated from the clean out of tanks which had been used to store unused AHF product materials. It was further determined that the residues from these AHF product tanks met the listing criteria in OAC 3745-51-33(c) for RCRA waste code number U134.

Before being transferred to the gravel area NW of Plant 4 (i.e., the area now identified as HWMU No. 7), the drummed AHF had been stored inside Plant 4 until October 1989 (the area inside Plant 4 was identified as HWMU No. 6 in the June 1991 RCRA Part A Permit Application). In October 1989, the nineteen (19) drums of AHF residues were overpacked and transferred to the Pilot Plant Warehouse (Building 68), an operating HWMU included in the October 1991 RCRA Part B Permit Application. Before they were moved to Building 68, eighteen (18) of the drums were overpacked into three (3) white metal boxes containing six (6) drums each. The remaining drum was placed in an 85-gallon overpack drum. In August 1990, the drummed AHF residues were moved to a gravel area South of the Cooling Towers in the area by the Tank Farm sump pit where they were stored until June 1991 (the area was identified as HWMU No. 8 in the June 1991 RCRA Part A Permit Application). In June 1991, the drummed AHF residues were transferred to Plant 9 for a period of less than 90 days, then transferred to the Plant 1 Storage Pad (also an operating HWMU included in the RCRA Part B Permit Application) where they are currently stored.

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2.3 Past and Current Use

The area designated as HWMU No. 7 is an open gravel area that was used from January to August 1990 to store nineteen (19) overpacked drums of AHF residue wastes (see previous Section 2.2). Based on the initial determination on January 1990, the drummed AHF residues were declared non RCRA hazardous and transferred to the gravel area outside (northwest) of Plant 4 (i.e., HWMU No. 7) pending processing/disposal via an on-site neutralization process. The overpacked, drummed AHF residues remained in this area until August 1990 when they were transferred to another gravel area south of the Cooling Towers (subsequently identified as HWMU No. 8 in June 1991). Since August 1990, HWMU No.7 has been empty and is currently roped-off and posted to restrict entry or uses until HWMU No. 7 is closed.

2.4 Security

As with all DOE facilities, security at the FEMP is strict. The entire FEMP processing area, including Plant 4 and the area around Plant 4, is surrounded by chain link fencing and monitored by on-site security personnel. All employees and visitors are required to enter through one of several guarded entrances into the facility. HWMU No. 7 has been marked off with stanchions, yellow plastic chain and warning signs to restrict unauthorized entry.

3.0 CLOSURE INFORMATION

3.1 Closure Objectives and Performance Standards

This CPID will be implemented to demonstrate RCRA closure of HWMU No. 7. Closure will be demonstrated based on a comparison of the analyses of samples of soil samples collected from within the boundaries of the HWMU to production area background soil samples collected from around Plant 4 (see Figure 6).

Plant 4 is bounded on the east by C street, on the west by B street, on the north by 2nd street, and on the south by Plant 7. Production activities in Plant 4 utilized anhydrous hydrofluoric acid to convert uranium trioxide (UO_3) to uranium tetrafluoride (UF_4). Based on likely operational losses during more than three decades of production, it is anticipated that fluoride residuals and slightly acidic pH levels will be present in the soils around Plant 4.

Unless sample analysis indicates contamination in HWMU No. 7 is significantly above the concentrations in the soil around the Plant 4 production area, it is reasonable to assert that there were no hazardous wastes released because:

- The 55-gallon drums of HF residues in HWMU No. 7 were neutralized and overpacked prior to storage in the HWMU;
- The only hazardous waste managed in HWMU No. 7 was the drummed and overpacked AHF residue stored in the area from January through August 1990;
- There is no record or evidence that any spill or leaks; and
- The overpacked containers are still in good condition.

The intent of this CPID is to affect closure of HWMU No. 7 by demonstrating that the storage of the nineteen (19) overpacked drums did not impact the pH or fluoride concentrations in the soils.

Closure of HWMU No. 7 will be consistent with closure performance standards in OAC 3745-66-11 (40 CFR 265.111). Closure performance standards to be followed for this CPID include:

- Minimizing the need for further maintenance by removing all hazardous wastes from the unit (already completed) and conducting sampling and analyses of the soils to demonstrate that there were no spills or leaks from the nineteen (19) overpacked drums of AHF residues stored in HWMU No. 7 from January 1990 through August 1990.
- Controlling, minimizing or eliminating, to the extent necessary to protect human health and the environment, the escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the groundwater, surface waters, or to the atmosphere.
- Conducting and documenting closure activities in accordance with the approved RCRA Closure Plan Information and Data.

Operations at the FEMP, including closure actions, must comply with all applicable DOE orders and Standard Operating Procedures to control radiation and chemical hazards and ensure that potential releases and exposures meet ALARA (as low as reasonably achievable) requirements.

In addition, the FMPC Waste Minimization Plan requires minimizing waste generated during closure. All closure or removal field activities will be subject to review and evaluation to minimize generation of mixed wastes subject to extended storage at the FEMP.

3.1.1 Cleanup Action Levels

Based on the assertion that no hazardous wastes have been released from HWMU No. 7, closure will be declared and certified if the soil samples confirm that there were no releases. Confirmation that no releases have occurred will be demonstrated if analyses indicate that the concentrations in soil samples collected from HWMU No. 7 are less than 2 standard deviations above the mean concentrations for fluoride and the pH in the unit is no more than 2 standard deviations below the mean pH in soil samples from production area background locations around Plant 4.

Samples of the soil underlying HWMU No. 7 and in other ~~production area~~ background sampling locations around Plant 4 will be collected and analyzed for pH and total fluoride (see Figure 6 for background sampling locations). If the sample analyses indicate that fluoride concentration is significantly higher or pH is significantly lower than the levels determined by THE PLANT 4 production area background samples IDENTIFIED IN THIS CPID, FEMP will remove up to 6 inches of soil from those grid locations within HWMU No. 7 where contamination is indicated by sample analysis. TO ENSURE THAT SAMPLES TAKEN IN THE PLANT 4 AREA ACCURATELY REPRESENT SITE BACKGROUND CONDITIONS, THE AREAS SURROUNDING PLANT 4 WERE INSPECTED FOR STAINS THAT MAY INDICATE ELEVATED LEVELS OF RADIOLOGICAL AND/OR CHEMICAL CONTAMINATION. PHOTOGRAPHS OF THE AREAS TO BE SAMPLED AROUND PLANT 4 ARE INCLUDED IN ATTACHMENT E. ADDITIONALLY, FEMP SPILL RECORDS WERE SEARCHED AND NO SPILLS WERE FOUND THAT WOULD INFLUENCE BACKGROUND SAMPLING RESULTS IN THE PLANT 4 AREA. EXISTING RECORDS ALSO SHOW NO EVIDENCE OF HAZARDOUS WASTE STORAGE IN THE PLANT 4 AREA WITH THE EXCEPTION OF HWMU NO 7.

CONSISTENT WITH REMOVAL ACTION NO. 17 (SEE DISCUSSIONS IN SECTION 1.3.2), SOILS REMOVED (IF FOUND CONTAMINATED) WILL BE BOXED AND STORED IN A RCRA STORAGE AREA (ONE OF THE STORAGE LOCATIONS LISTED IN THE PART B PERMIT APPLICATION) OR STORED IN A CONTROLLED STORAGE BUILDING (TO BE CONSTRUCTED UNDER PHASE II OF REMOVAL ACTION NO. 17). ~~Removal and management of contaminated soil will be in accordance with the current revision of the FEMP Improved Storage of Soil and~~

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~~Debris Removal Action # 17 Work Plan. However, if~~

IF completion of closure requires removal of more than 6 inches of soil from the contaminated grids, revised CPID will be prepared to discuss the need for additional clean up actions ~~and~~. THE REVISED CPID WILL provide the supporting information necessary to determine if any FURTHER actions should be taken prior to the final ~~Remedial Action(s)~~ REMEDIATION OF CONTAMINATED SOILS FOLLOWING THE ROD FOR OU5 OR OU3, CONSISTENT WITH THE CLEAN UP CRITERIA ESTABLISHED BY THE ROD FOR OU5. ~~under the applicable ROD.~~

It should be understood that limited removal of soils proposed to achieve RCRA closure, is specific to HWMU No. 7.

If, as expected, all contamination inside and around HWMU No. 7 is attributed to Plant 4 (i.e., contamination is comparable to production area background samples) RCRA closure will be declared and certified as completed. Any further actions necessary for soil removal around Plant 4 prior to the ROD for OU 5 will be documented and incorporated into the RI/FS and the Proposed Plan submitted for review during the ROD process. Final Remedial Design/Remedial Actions will be developed and conducted following the requirements of the USEPA ROD for OU 5 (Contaminated Environmental Media).

3.2 Closure Methodology

This section addresses the procedures that will be followed to demonstrate closure of HWMU No. 7. Closure of the unit involves sampling and analyses of soil samples inside the boundaries of HWMU No. 7 and in the designated production area background sample locations and if necessary, removal of soil as described in Section 3.1.1 from the HWMU (see Figure 5). Samples to be collected are discussed in Section 3.3 of this CPID. Sampling procedures are described in detail in the SAP (Attachment A). The proposed closure schedule and activities are discussed in Section 5.0.

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3.2.1 Characterization of Potential Soil Contamination

To demonstrate closure and ensure the closure performance standards are met, the following specific RCRA closure activities will be implemented:

- 1) The FEMP will notify the OEPA and registered Professional Engineer (PE) at least five (5) working days prior to the initiation of soil sample collection as discussed in the Closure Schedule (Section 5.0).
- 2) Soil samples from beneath HWMU No. 7 (as defined in Section 2.1 and Figure 5) will be collected. Soil samples will consist of twelve (12) sets of soil samples (providing a total of 36 ~~24~~ soil samples) taken within the storage unit. The twelve (12) sample locations identified are shown in the sampling grids shown in Figure 5. Each set of soil samples at a location will consist of three (3) ~~two (2)~~ soil samples, each taken as a grab ~~composite~~ sample at two distinct depths. The sampling depths are 0 to 6 inches, 6 TO 12 INCHES, and 12 to 18 inches. One (1) duplicate set of samples (i.e., a total of 2 samples) will be collected from the soil underlying the unit. All samples will be collected following the procedures in the SAP (Attachment A).
- 3) Soil samples from 12 sample locations around Plant 4 will be collected to establish a production area background concentration of pH and fluorides. Soil samples will consist of twelve (12) soil samples (providing a total of 24 soil samples) taken at the sample locations shown in Figure 6. Each set of soil samples at a location will consist of two (2) soil samples, each taken as a grab composite sample at two distinct depths. The sampling depths are 0 to 6 inches and 12 to 18 inches. One (1) duplicate set of samples (i.e., a total of 2 samples) will be collected from the soil in the production area background sample locations. All samples will be

collected following the procedures in the SAP (Attachment A).

- 4) All reusable equipment used during the sampling effort will be properly decontaminated, to prevent cross-contamination. Sample equipment decontamination procedures are described in the SAP (Attachment A).

IF CONTAMINATED SOIL IS REMOVED PER SECTION 3.1.1 OF THE CPID, IT WILL BE BOXED AND STORED IN ONE OF THE RCRA STORAGE AREAS IDENTIFIED IN THE PART B PERMIT APPLICATION OR PLACED IN A TEMPORARY PILE ADJACENT TO THE EXCAVATION. IN ACCORDANCE WITH REMOVAL ACTION NO. 17, THE TEMPORARY PILE WILL BE PLACED ONTO A PLASTIC LINER AND COVERED WITH PLASTIC TO CONTROL RUN-ON AND RUN-OFF (ALSO SEE SECTION 1.3.2). ~~All wastes generated during closure of the unit will be containerized and managed in an appropriate suspect hazardous waste storage location pending waste characterization and determination~~ WILL BE CONDUCTED in accordance with the approved FMPC Waste Analysis and Waste Determination Plans.

Only uncontaminated equipment will be used during closure of HWMU No. 7. Detailed procedures for decontamination of sampling equipment is addressed in the SAP, Section 2.4.2 (Attachment A).

3.3 Quality Assurance/Quality Control

Duplicate samples will be taken from the unit to confirm the laboratory's QA/QC program and document analytical precision. One duplicate sample will be taken for every twenty (20) samples (or fraction thereof) collected. The duplicate sample will be labeled and numbered in such a way that will not indicate that the sample is a duplicate.

Additional QA/QC requirements for sampling and the analytical laboratory's quality assurance and quality control (QA/QC) procedures will be consistent with the FEMP Sitewide CERCLA Quality Assurance Project Plan (SCQ), as discussed in the attached SAP (Attachment A).

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3.4 Management of Wastes Generated During Closure

All wastes generated during closure of the unit will be evaluated in accordance with the approved FMPC Waste Analysis and Waste Determination Plans. Wastes generated during closure will be placed in appropriate containers, properly labeled, and managed in accordance with all applicable RCRA and DOE storage requirements.

3.5 Health and Safety

Prior to conducting any field activities at the FEMP, a health and safety assessment must be conducted to characterize existing hazards and conditions. Based on the findings of the health and safety assessment, the Project/Task Specific Health and Safety Plan will specify required health and safety procedures, including personnel protection equipment, entry and exit requirements, and personnel/PPE decontamination procedures. Guidelines for the Preparation of FMPC Project/Task Specific Health and Safety Plan are included in Attachment B.

As part of the safety assessment, radioactivity screening will be done over the area to determine radiation protection requirements. Additional screening, including on-site laboratory analyses for radionuclides, may be required to further categorize radiation levels and hazards before the samples can be shipped to an off-site laboratory. Radiation survey procedures and requirements for shipping samples to off-site laboratories for analysis will be in accordance with approved FEMP/FMPC procedures.

4.0 CLOSURE CERTIFICATION

The samples collected within the unit boundary (see Section 3.2) will be used to demonstrate closure of HWMU No. 7. If the concentrations of hazardous waste constituent contamination in these samples are not below the cleanup action levels discussed in Section 3.1.1 or removal of more than 6 inches of soil from contaminated grids, revised CPID will be prepared to discuss the need for additional clean up actions and provide supporting information necessary to determine if any actions should be taken prior to the final Remedial Action(s) under the approved ROD. It should be understood that limited removal of soils is proposed to achieve RCRA closure, is specific to HWMU No. 7.

4.1 Certification Inspections and Documentation

The certifying Professional Engineer or his/her designated representative will be required to be present to inspect all significant closure activities, including unit inspections, soil sampling and other QA/QC sampling activities to support verification of cleanup. The purpose of the inspections is to ensure that the closure actions and procedures are conducted in accordance with the approved Closure Plan Information and Data.

All RCRA closure certification documentation will be compiled and retained at the FEMP for access and inspection by OEPA. RCRA closure certification documentation shall include a daily log of activities, field notes recorded by the owner and the owner's representatives during closure activities, reports of laboratory analyses, copies of any hazardous waste manifests, chain-of-custody records for sample handling and tracking, and certification statements by both the owner and the registered Professional Engineer.

4.2 Statement of Certification

The DOE and an independent, qualified, registered, Professional Engineer, will submit certification of closure within 60 days after completing the actions specified in the approved Closure Plan Information and Data for this unit. The Certification will meet the requirements of OAC 3745-50-42(D) and OAC 3745-66-15 and 40 CFR 270.11(d) and 40 CFR 265.115, respectively. The certification statements will be worded as follows:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

U. S. Department of Energy

I hereby certify that the hazardous waste management unit has been closed in accordance with the specifications in the approved closure plan.

Ohio Registered Professional Engineer

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5.0 CLOSURE SCHEDULE

CLOSURE OF HWMU NO. 7 WILL BE INITIATED ON THE DATE THAT THE FEMP RECEIVES THE OEPA APPROVAL OF THIS CPID. ASSUMING NO MODIFICATIONS TO THE PLAN ARE REQUIRED OR UNEXPECTED EVENTS ARE ENCOUNTERED, IT IS EXPECTED THAT CLOSURE ACTIVITIES CAN BE COMPLETED WITHIN 180 DAYS FROM THE DATE FEMP RECEIVES APPROVAL OF THE CPID. THE SCHEDULE IS ILLUSTRATED IN FIGURE 4. CLOSURE CERTIFICATION WILL BE SUBMITTED WITHIN 60 DAYS OF COMPLETION. IF UNEXPECTED EVENTS ARISE OR CLEAN CLOSURE CANNOT BE ACHIEVED, A REVISED CPID WILL BE SUBMITTED WITHIN 30 DAYS OF THAT DETERMINATION.

THE SCHEDULE DOES NOT ANTICIPATE UNEXPECTED EVENTS SUCH AS ADVERSE WEATHER, SAMPLES LOST OR DAMAGED IN SHIPMENT, OR INVALIDATED DATA DUE TO THE ANALYTICAL LABORATORY EXCEEDING SAMPLE HOLDING TIMES. IF NECESSARY, A REQUEST WITH JUSTIFICATIONS FOR AN EXTENSION OF THE TIME REQUIRED FOR COMPLETION OF ACTIVITIES WILL BE SUBMITTED TO THE AGENCY IN ACCORDANCE WITH OAC 3745-66-13(A) AND OAC 3745-66-13(B) [40 CFR 265.113(A) AND 40 CFR 265.113(B)]. THE OEPA AND AN INDEPENDENT, QUALIFIED, REGISTERED PROFESSIONAL ENGINEER WILL BE NOTIFIED AT LEAST FIVE (5) BUSINESS DAYS BEFORE CRITICAL ACTIVITIES BEGIN (SEE FIGURE 4).

~~Prior to initiating a project at the FEMP, documentation required for compliance with the National Environmental Policy Act (NEPA) must be completed and approved. In addition, to comply with DOE orders, several internal FEMP procedures must be prepared, reviewed, approved, and implemented. Examples of the DOE project specific requirements are:~~

- ~~● Operational Readiness Reviews~~
- ~~● Site Work Plans~~
- ~~● Radiological and Chemical Health and Safety Risk Assessments~~
- ~~● Health and Safety Plans~~
- ~~● Worker Training Plans and Instruction~~

~~Internal FEMP NEPA and DOE compliance activities require up to 180 days to~~

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~~complete and are initiated concurrently with the submittal of the Closure Plan Information and Data. However, before NEPA and DOE compliance requirements can be completed, the final requirements and specifications of the OEPA approved Closure Plan Information and Data must be defined and incorporated.~~

~~Upon receipt of approval of the Closure Plan Information and Data for HWMU No. 7, the FEMP will complete the remaining NEPA and DOE compliance requirements. Assuming no modifications to the plan are required, closure activities will be completed within 240 days from the start of closure activities and closure will be certified within 60 days after completion of closure. The FEMP will notify the OEPA and PE at least 45 days prior to the date on which closure activities will begin. It is anticipated that the 45 day notice can be provided when OEPA approval is received. If more time is required to complete NEPA and DOE compliance documentation and activities, a revised schedule will be submitted to the OEPA. Figure 7 shows the anticipated schedule for closure of HWMU No. 7.~~

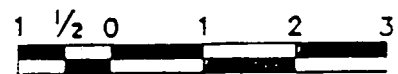
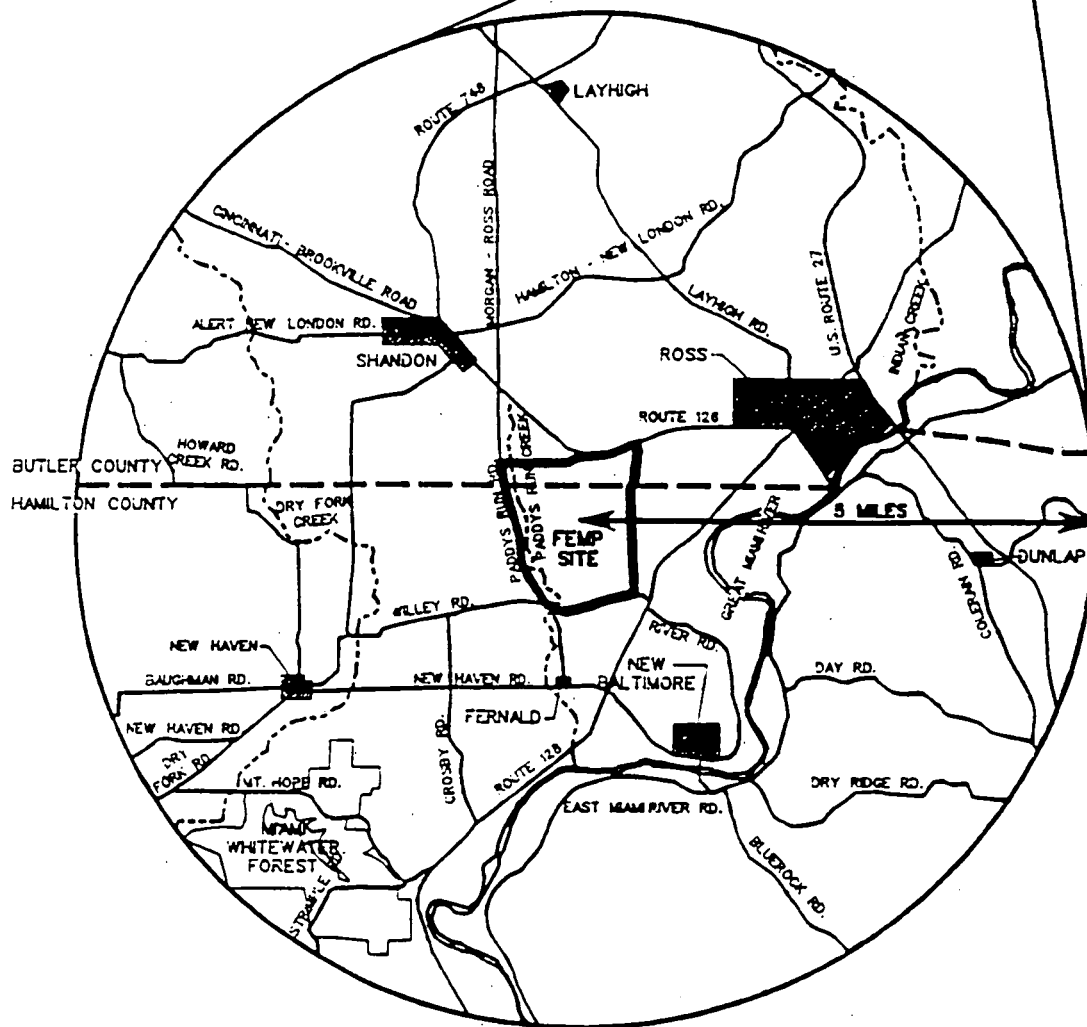
~~The OEPA and the registered PE will be notified at least five (5) business days in advance of significant activities conducted pursuant to closure of the unit. Significant activities include unit inspections, soil sampling of the unit and other QA/QC sampling activities to support verification of cleanup.~~

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SCALE IN MILES 0027

FIGURE 1
FEMP AND VICINITY MAP

D. 10-20-32

DRAWN: M. CORNELL



U.S. DEPARTMENT OF ENERGY
FERNALD, OHIO

DWG. NO.

089-1-0022

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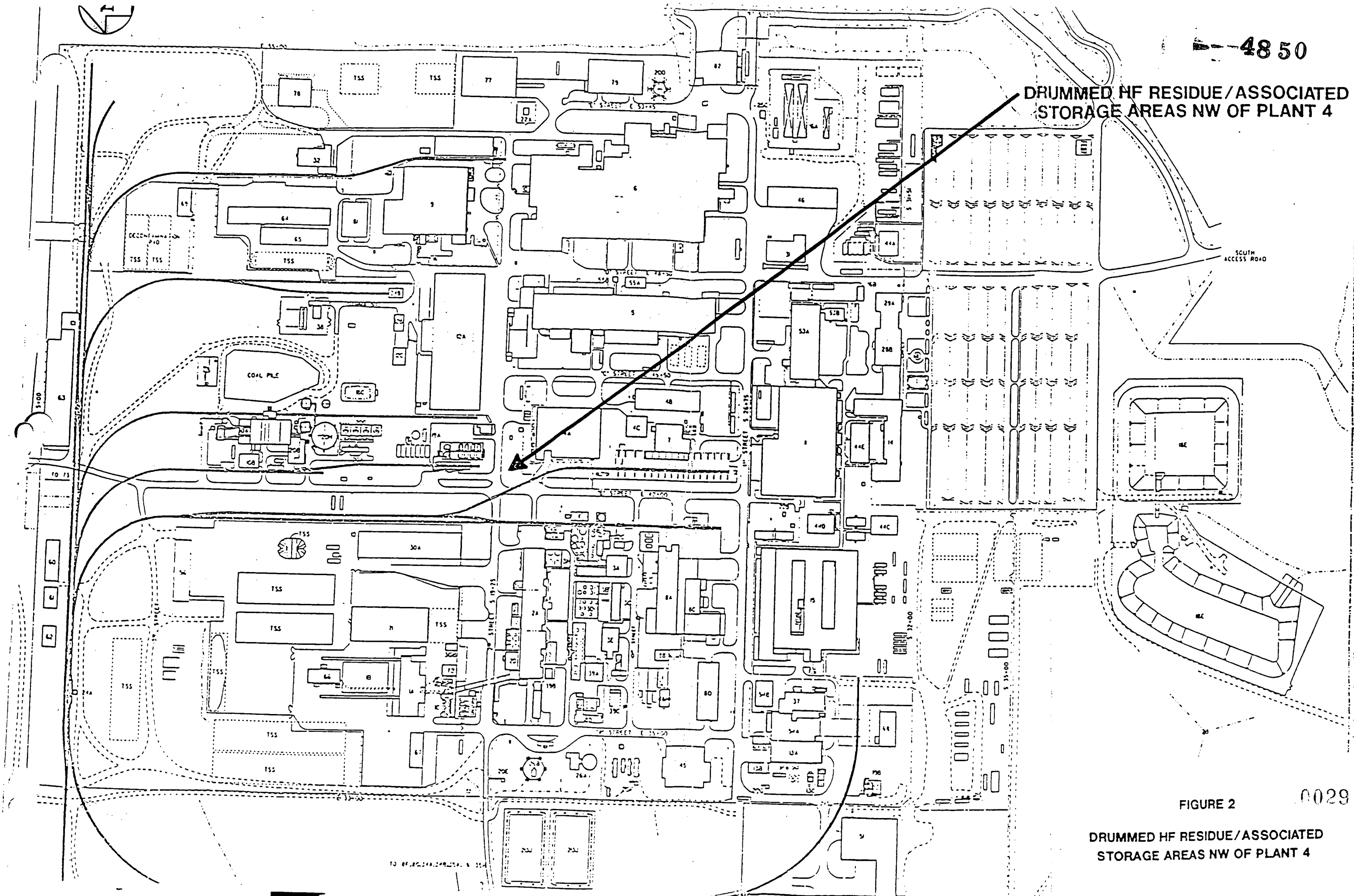
DRUMMED HF RESIDUE/ASSOCIATED
STORAGE AREAS NW OF PLANT 4

SCUTH
ACCESS ROAD

FIGURE 2

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DRUMMED HF RESIDUE/ASSOCIATED
STORAGE AREAS NW OF PLANT 4



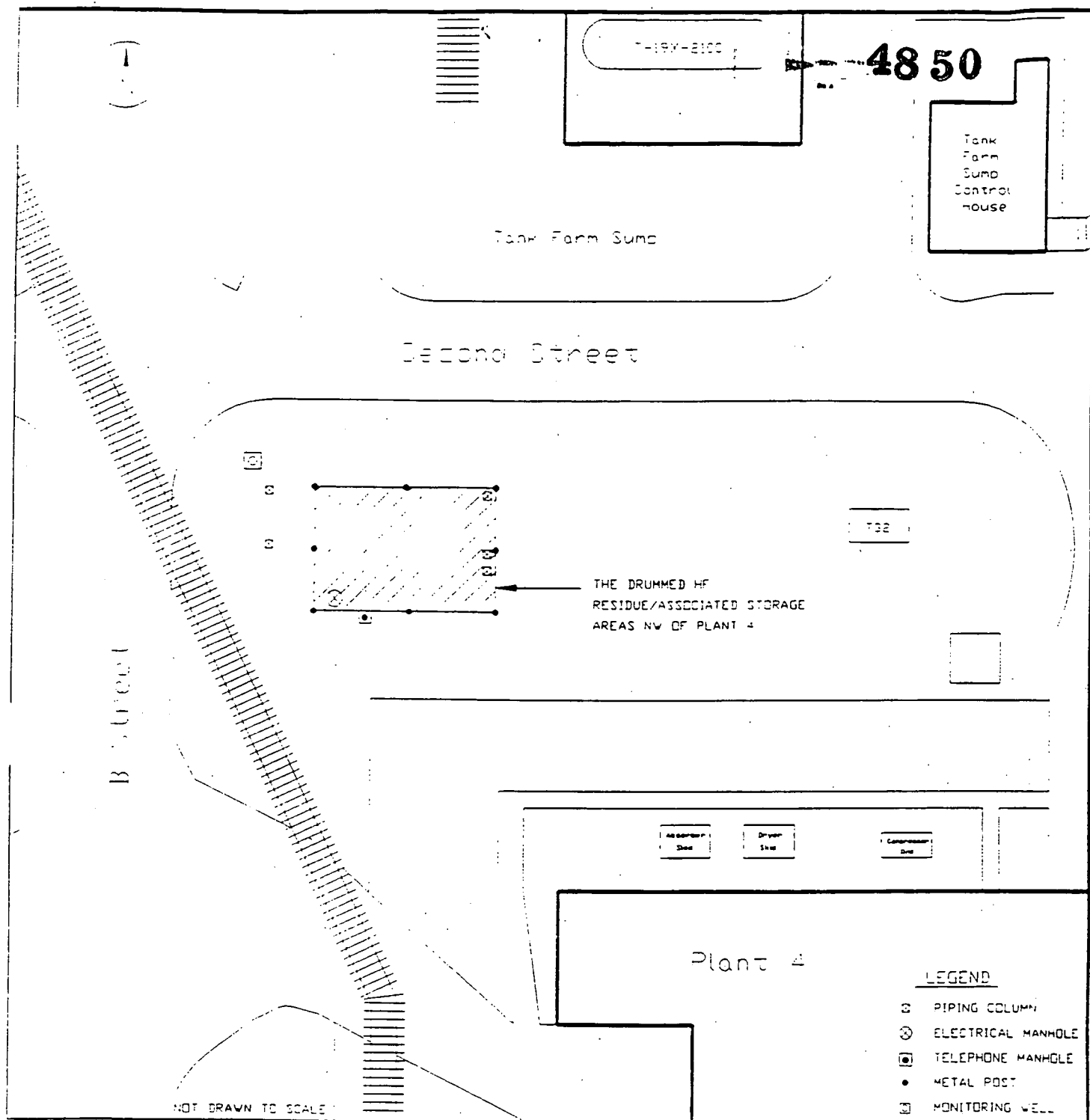


FIGURE 3
THE DRUMMED HF RESIDUE/ASSOCIATED STORAGE AREAS NW OF PLANT 4

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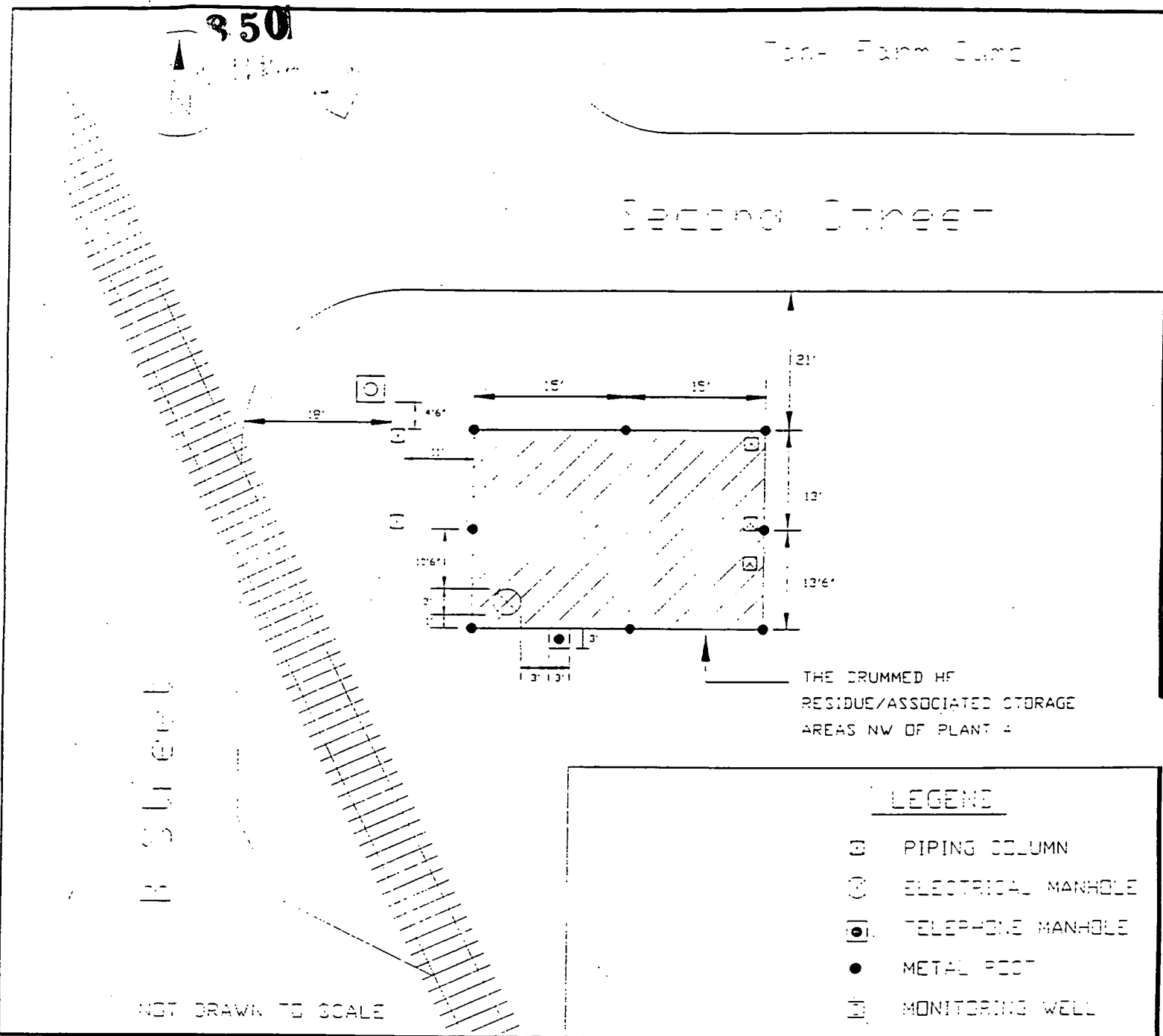


FIGURE 4
PLAN LAYOUT OF THE DRUMMED HF RESIDUE/ASSOCIATED STORAGE AREAS NW OF PLANT 4

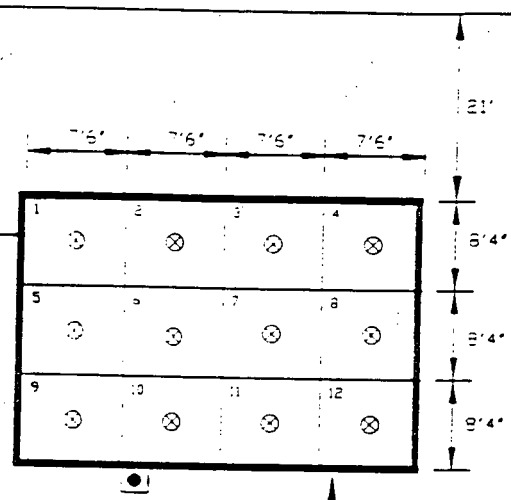
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Closure Plan Information and Data
Drummed HF Residue/Associated
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B Street

Second Street

NOT DRAWN TO SCALE



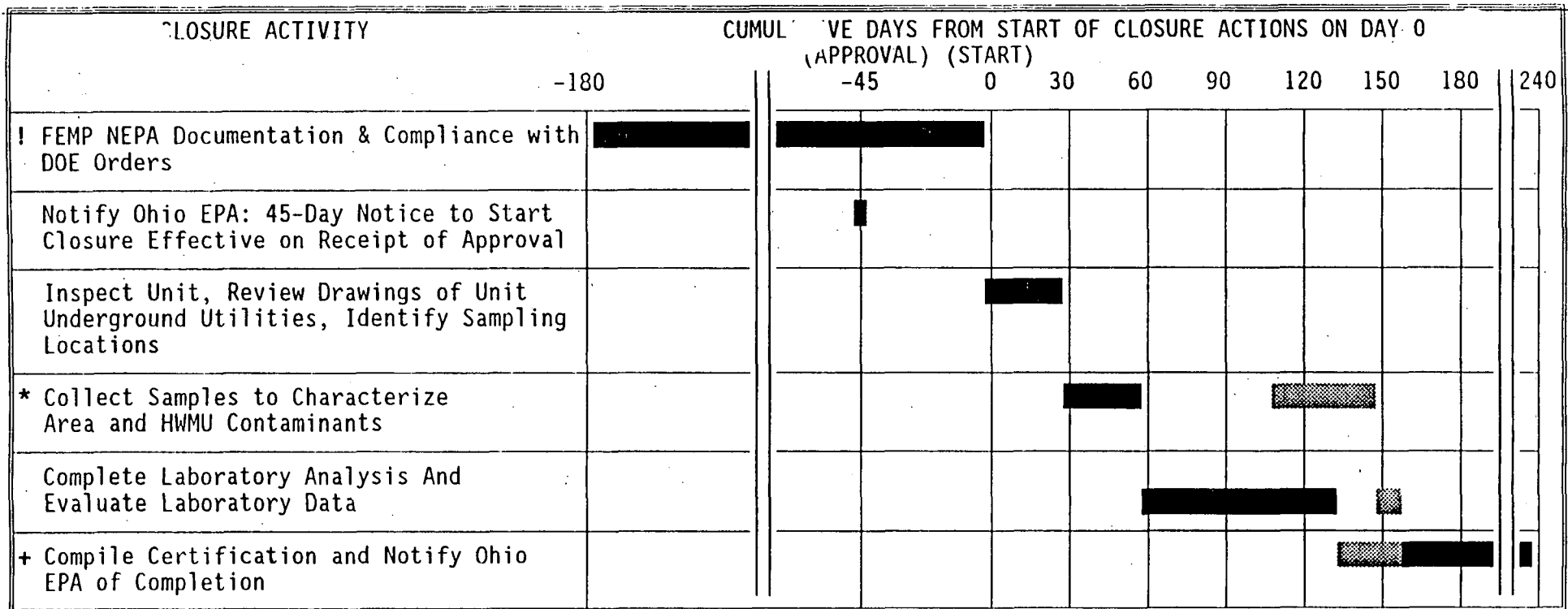
THE DRUMMED HF
RESIDUE/ASSOCIATED STORAGE
AREAS NW OF PLANT 4

LEGEND

- ⊠ PIPING COLUMN
- ⊗ SAMPLING LOCATION
- TELEPHONE MANHOLE
- ◼ MONITORING WELL

FIGURE 5
PROPOSED HWMU SAMPLING LOCATIONS

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! - Requirements set by NEPA and DOE Orders must be met before closure field activities can begin. These activities were initiated concurrent with preparation of this Closure Plan Information and Data. The time required to complete these activities will be dependent upon the changes that may be required to address modifications made by OEPA.

* - Indicates critical field activities requiring 5-day advanced notice to the OEPA and inspection/review by the independent, qualified, registered, Professional Engineer or his/her representative. Includes all sampling conducted to confirm cleanup.

+ - Requests for an extension of the time required for completion of closure, if necessary, will be submitted to the agency in accordance with OAC 3745-66-13(A) and OAC 3745-66-13(B), [40 CFR 265.113(a) and 40 CFR 265.113(b)].

[Hatched bar] - Indicates conditional activities that are dependent on an evaluation of previous analytical results.

FIGURE 7: RCRA CLOSURE SCHEDULE FOR DRUMMED HF RESIDUE/ASSOCIATED STORAGE AREAS NW OF PLANT 4

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Storage Areas NW of Plant 4

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ATTACHMENT A

SAMPLING AND ANALYSIS PLAN
FOR THE
DRUMMED HF RESIDUE/ASSOCIATED STORAGE AREAS NW OF PLANT 4

Revision 1
June, 1993

Fernald Office
U.S. Department of Energy
Fernald Environmental Management Project
7400 Willey Road
Fernald, Ohio 45030

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Sampling and Analysis Plan
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SAMPLING AND ANALYSIS PLAN
FOR THE
DRUMMED HF RESIDUE/ASSOCIATED STORAGE AREAS NW OF PLANT 4

1.0 INTRODUCTION

This Sampling and Analysis Plan (SAP) for the Drummed HF Residue/Associated Storage Areas NW of Plant 4, referenced in this SAP hereinafter as HWMU No. 7, describes the sample collection and handling procedures, identifies the analysis to be conducted and specifies the sample quality assurance/quality control procedures to demonstrate closure of HWMU No. 7. All sampling and analysis will follow approved procedures discussed in this SAP. This SAP is prepared to be consistent with the current revision of the FEMP Site-Wide CERCLA Quality Assurance Project Plan (SCQ).

1.1 Sampling Objectives

This SAP supports the RCRA closure plan information and data (CPID) and specifies sampling and analysis to determine if the hazardous waste management unit (HWMU) is contaminated from previous HWMU activities. The sample types and the number of samples to be collected during closure of the unit are specified SAP Section 2. The closure analytical results will be used to evaluate closure performance. Sampling in support of RCRA closure actions will be performed to:

- 1) Determine if there is soil contamination resulting from waste management practices associated with the HWMU being closed.
- 2) Screen for radiological parameters in the samples.
- 3) Characterize waste materials generated during RCRA closures. Waste characterizations and determinations referenced in this SAP will be conducted according to the Feed Materials Production Center (FMPC)

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Waste Analysis and Waste Determination Plans, as approved by the Ohio Environmental Protection Agency (OEPA).

All wastes and materials being held for RCRA determinations will be managed in a manner consistent with hazardous waste management practices. Wastes determined to be RCRA hazardous will be managed and disposed of according to applicable hazardous waste rules and regulations.

1.2 Sample Analysis

To evaluate HWMU closure performance, samples collected during RCRA closures will be analyzed for pH and total fluoride. In addition, radiological analyses will be conducted to determine total uranium and gross alpha and gross beta levels on samples that will be collected during closure. Analyses will be conducted using analytical methods specified in the FEMP Laboratory Analytical Methods, Volumes III, IV, and V of the FEMP SCQ.

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2.0 SAMPLE COLLECTION

The following sections discuss the procedures that will be used for sampling in support of this RCRA closure as specified in the closure plan information and data.

2.1 Sampling Equipment

The following equipment may be used in the process of collecting samples during closure of HWMU No. 7:

- Bucket or hand Auger (Stainless Steel)
- Bowls or buckets (stainless steel or other suitable material)
- Spoons, scoops or trowels (stainless steel or other suitable material)
- Spatulas (stainless steel or other suitable material)
- Sample bottles (500 mL widemouth polyethylene jars w/polyethylene closures)
- Thermal coolers and freezer packs
- Sample labels
- Waterproof marking pen
- Field sampling logbook and field data forms
- Chemical resistant gloves
- Polyethylene or other approved impervious sheeting
- Teflon Coliwasa samplers

This list may be modified appropriately by a trained, qualified sampling supervisor or manager. Any change to this list will be noted in the field sampling logbook.

2.2 Soil Sampling

To demonstrate closure and ensure the closure performance standards are met, the following samples will be collected:

- 1) Soil samples from beneath HWMU No. 7 (as defined in Section 2.1 of the CPID) will be collected. Soil samples will consist of twelve (12) sets of soil samples (providing a total of 36 ~~24~~ soil samples) taken within the storage unit. The twelve (12) sample locations identified are shown in the sampling grids in Figure 5. Each set of soil samples at a location will consist of three (3) ~~two (2)~~ soil samples, each taken as a grab ~~composite~~ sample at two distinct depths. The sampling depths are 0 to 6 inches, 6 TO 12 INCHES, and 12 to 18 inches. One (1) duplicate set of samples (i.e., a total of 2 samples) will be collected from the soil underlying the unit. All samples will be collected following the procedures in the SAP (Attachment A).
- 2) Soil samples from 12 sample locations around Plant 4 will be collected to establish a production area background concentration of pH and total fluorides. Soil samples will consist of twelve (12) sets of soil samples (providing a total of 24 soil samples) taken at the sample locations shown in Figure A-2. Each set of soil samples at a location will consist of two (2) soil samples, each taken as a grab composite sample at two distinct depths. The sampling depths are 0 to 6 inches and 12 to 18 inches. One (1) duplicate set of soil samples (i.e., a total of 2 samples) will be collected from the production area background sample locations shown in Figure 6. All samples will be collected following the procedures in the SAP (Attachment A).

2.2.1 Soil Sampling Locations

Soil sampling grid locations inside HWMU No. 7 (shown on Figure A-1) and in four (4) production soil background sampling areas (shown in Figure A-2) were established using 12 sampling grids in each area. A sample set will be collected from each of the 12 grids within HWMU No. 7. The grids in the Plant 4 production background sampling areas were numbered and three sampling grids were randomly selected using the Random Number Tables generated on Lotus 1-2-3. The first three (3) grid locations from each of the four (4) background sampling areas around Plant 4 were selected from these tables. The grid and sample locations are displayed on Figures A-1 and A-2. A sample set will be collected from the approximate center of each of the grid locations.

2.2.2 Soil Sampling Procedures

Samples of the soil will be taken, as indicated in the closure plan information and data, to determine whether a hazardous waste release has occurred in the HWMU No. 7. This determination will be based on a comparison of sample results inside HWMU No. 7 with the Plant 4 production area background soil sample results.

Before initiating any sampling activities in HWMU No. 7 or at production area background sampling locations, site blue prints will be reviewed with the facility engineer to determine if there are any known underground utilities, pipes, wiring or other similar structures. Underground structures will be identified and marked at the field sampling locations to prevent sampling in these areas. Sampling or decontamination activities will not be conducted during adverse weather (e.g., rain, snow).

The following procedures will be used to collect samples of the soil in HWMU No. 7 and in the production area background sampling locations. The soil samples will be collected from the locations described in section 2.2 and 2.2.1 of this SAP.

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- 1) Prior to collecting a soil sample, remove gravel in the sampling location to expose the underlying soil.
- 2) Place clean polyethylene or other approved impervious sheeting on the ground to protect sampling equipment from potential contamination.
- 3) Use a decontaminated stainless steel bucket auger or soil coring device to advance the soil boring to extract a 6 inch soil sample from the interval of 0 inches to 6 inches from the soil surface.
- 4) Use a clean spatula (stainless steel or other suitable material), or other approved device to remove soils from the auger and place them into a stainless steel pan (or remove soil core cylinder).
- 5) To composite the sample (if using the soil auger), divide the sample volume into four quarters within the pan. Mix opposite quarters together, then mix resulting halves together into a single volume. Repeat this step.
- 6) Using the spatula or other approved device, transfer a sample from the mixed soils in the pan into the appropriate sample container (or, if using a soil core sampler, cap the sample cylinder). Follow container management procedures in Section 2.3.
- 7) Repeat steps 2, 3, 4 and 5 to obtain soil samples from a depth of 12 inches to 18 inches from the surface.
- 8) Use a decontaminated stainless steel bucket auger or soil coring device to advance the soil boring to extract a 6 inch

soil sample from the interval of 12 inches to 18 inches.

- 9) Use a decontaminated spatula (stainless steel or other suitable material), or other approved device to remove soil from the auger. Transfer the sample into the appropriate sample container.
- 10) Follow container management procedures in Section 2.3.
- 11) Using the above procedures, collect one (1) duplicate sample of the soil from a randomly selected sampling location.
- 12) Upon completion of sampling at a sampling location, decontaminate all sampling equipment used, following procedures in Section 2.4. Sampling equipment that cannot be decontaminated shall be managed in a manner consistent with FEMP hazardous waste management practices pending a RCRA hazardous waste determination.

2.3 Sample Handling And Management Of Sample Containers

Once a sample has been placed inside a sample container it should be managed as follows:

- 1) For all samples: Tightly close the lid, seal with custody tape and attach appropriate label that has been filled out using indelible ink.
- 2) Document and record sample label and container information in the field sampling logbook, and on a Sample Analysis Request/Custody Record form.
- 3) Immediately place sample containers into a sample cooler that will

maintain samples at approximately 2 - 6 °C.

- 4) Record all transfers of sample custody on the Sample Analysis Request/Custody Record form.
- 5) To maintain chain-of-custody, ensure that access to all samples is controlled. This requires the sample collector or designated sample custodian to:
 - have constant direct control,
 - use a locked limited access area under his/her control, or
 - affix signed container custody seals to samples or sample coolers.

When the planned sampling activity has been completed, secure the lid of the cooler containing the samples and transfer the samples to the FEMP Sample Processing Laboratory. The FEMP Sample Processing Laboratory will be responsible for ensuring custody records are maintained during shipment to the laboratory selected to conduct the analysis.

2.4 Equipment Decontamination

All sampling equipment to be used during closures must be clean or decontaminated. Before beginning any decontamination procedures, all personnel shall inspect their clothing to ensure that there is no visible contamination. Clean chemical resistant gloves will be used during the decontamination process, and when handling any clean equipment. Equipment decontamination procedures are discussed in the following sections.

All sampling equipment that will be used must be clean or decontaminated prior to use. All reusable sampling equipment that has been used to collect a sample must be decontaminated before it is used to collect additional samples.

2.4.1 Decontamination Supplies

Supplies used in decontamination may vary based on the media being sampled and the type of contamination encountered. The following basic list of supplies may be modified, as necessary, by a trained, qualified supervisor or manager:

- Laboratory grade non-phosphate detergent solution
- Long-handled scrappers (stainless steel, glass)
- Long-handled, soft bristled brushes
- Portable low-pressure water sprayer
- Potable water
- Deionized water (organic free)
- Polyethylene or other approved impervious sheeting
- Heavy duty plastic bags
- Absorbent materials, socks, and pads
- Wash/rinse tubs, buckets, or other approved containers
- Reagent Grade Methanol
- Dilute (0.02 Normal nitric acid) for acid rinsing

2.4.2 Decontamination Procedures

All reusable equipment will be decontaminated after each use. If decontamination is not practical, the equipment will be managed in a manner consistent with FEMP hazardous waste management practices pending RCRA hazardous waste determination. The following procedures will be used to decontaminate equipment:

- 1) Establish a decontamination area in a location OUTSIDE THE BOUNDARIES OF THE HWMU. ~~that is protected from potential contamination.~~ Use a double thickness of 6-mil polyethylene, or other approved impervious sheeting, to line the decontamination area. CONSTRUCT ~~As appropriate, construct~~ containment dikes for control of run-off.

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Provide appropriate containers for containment, handling, and collection of wastes and rinse water. Non-liquid wastes shall be collected in a heavy duty plastic bag, 55-gallon drum, or other approved container. Liquid wastes will be collected in buckets and/or placed into 55-gallon drums or other approved liquid storage containers.

- 3) Remove visible residues and stains from the equipment by brushing, scraping, or scrubbing.
- 4) Rinse with potable water.
- 5) Wash with a non-phosphate, laboratory-grade detergent and potable water solution.
- 6) Rinse with potable water.
- 7) Rinse with a dilute acid solution. (NOTE: Residual acids in used rinse solutions will be neutralized TO A pH GREATER THAN 2. THE pH OF THE NEUTRALIZED SOLUTION WILL BE VERIFIED WITH IN THE FIELD BEFORE DISPOSAL.)
- 8) Rinse with potable water.
- 9) Rinse with a solvent solution THAT WILL NOT GENERATE A RCRA LISTED WASTE (i.e., ETHANOL). ~~methanol~~.
- 10) Triple rinse with deionized, organic-free water.
- 11) Air dry in a dust-free environment. Cover with clean plastic sheeting.
- 12) Upon completion of decontamination of sampling equipment, wash the

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buckets and other containers used for temporary storage of the decontamination wash and rinse wastes with clean detergent solution and rinse twice with deionized water.

A grab sample of the equipment decontamination rinseate will be collected each day sampling is conducted. The sample will be collected using the procedures described in section 4.1 of this SAP.

2.5 Wastes Generated During Sampling and Decontamination

Non-liquid wastes and wastewaters collected during sampling and decontamination of sampling equipment and miscellaneous wastes (e.g., plastic sheeting, brushes, and disposable protective clothing), will be managed in a manner consistent with FEMP hazardous waste practices pending RCRA determinations. Waste determinations shall be performed on the materials following the FEMP Waste Analysis and Waste Determination Plans, as approved by the OEPA. Wastes will be managed and disposed according to all applicable radiological, hazardous and solid waste rules and regulations.

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3.0 FIELD DOCUMENTATION AND SAMPLE HANDLING

Sample handling and documentation procedures shall conform to approved FEMP procedures applicable at the time closure activities are conducted. The information in the following sections presents the procedures to follow after the samples have been collected.

3.1 Field Sampling Logbook

A field sampling logbook will be kept and updated to document information pertinent to the RCRA closure sampling activities. The logbook will be bound, with consecutively numbered pages. At a minimum, the entries in the logbook will include the following:

- Name of supervisor(s) responsible for HWMU management
- Name of FEMP closure project manager
- Maps, drawings, or photographs of the sampling site
- Purpose of sampling (e.g., verification of decontamination)
- Description and location of sampling points
- Description of sampling methods and field sampling activities (e.g., containers, types of samples, etc.)
- Documentation of any deviations from this SAP
- Weather conditions at the time samples are collected
- Number, type, and volume of samples taken
- Date and time of collection
- Field sample identification number(s)
- Names of sampling personnel
- Date and time of transfer to Sample Processing Lab
- Field observations (e.g., spills or other activities nearby)
- Data from field measurements (e.g., pH, specific conductance)
- Signatures of persons responsible for maintaining the logbook

The logbook will record information sufficient to reconstruct the sampling event without reliance on the collector's memory. The logbook shall be stored and maintained according to FEMP documentation control procedures.

3.2 On-Site Handling/Processing Procedures

Sample coolers, along with the signed and completed Sample Analysis Request/Custody Record form, will be taken to the designated FEMP Sample Processing Lab. Each person who relinquishes and takes possession of the samples or sample coolers shall sign the Custody Record and record the date and time of transfer.

The FEMP will characterize radiation levels associated with the samples to determine disposition of the samples for analysis.

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4.0 QUALITY ASSURANCE AND QUALITY CONTROL

Quality Assurance/Quality Control(QA/QC) procedures are required to identify, evaluate, and control conditions and activities that can affect the quality and validity of the analytical data obtained from sampling and analysis. Validation of the data requires accurate records to document procedures and conditions during the sampling and analysis. At a minimum these records will include:

- an updated field sampling logbook
- properly completed sample labels
- field and laboratory QA/QC samples
- completed sample Analysis Request/Custody Record forms

Quality assurance procedures will include:

- 1) Only non-contaminated sample containers will be used.
- 2) Clean chemical resistant gloves will be used whenever contact is made with the sampling equipment.
- 3) Sampling containers and collection equipment shall be handled, stored, and maintained in a manner that prevents cross-contamination.
- 4) Any field conditions, events, or activities that may affect analytical results will be documented in the field sampling logbook (see Section 3.1 of this SAP).

Sampling activities conducted during RCRA closures shall be consistent with the FEMP Site-Wide CERCLA Quality Assurance Project Plan (SCQ) and applicable QA/QC procedures. The following sections discuss field QA/QC, laboratory QA/QC, and sample Analysis Request/Custody Records forms.

4.1 Field QA/QC Procedures

To prevent cross-contamination between samples and locations, only clean or decontaminated sampling equipment will be used. When sampling equipment is decontaminated following collection of a sample, a sample of the final rinseate will be collected and analyzed for pH and total fluorides. Analysis of these samples will be used to confirm that decontamination was effective. DECONTAMINATION WILL BE CONSIDERED EFFECTIVE WHEN pH IS BETWEEN 2.0 AND 12.5 AND FLUORIDE CONCENTRATIONS ARE LESS THEN 1.0 MG/L. One (1) sample of the final rinseate from sampling equipment decontamination will be collected each day sampling is conducted using the following procedure:

- 1) Pour deionized water over and through the cleaned surfaces of the decontaminated equipment.
- 2) Collect a sample of the deionized water rinseate using an appropriate sample container.
- 3) Follow container management procedures in Section 2.3.

Blanks will be collected and analyzed as part of normal QC procedures. At a minimum, the following samples will be collected for each sampling event:

- one (1) container/trip blank, a sample of clean deionized water prepared in a non-contaminated area and taken into the field during each sampling event,
- one (1) field blank, a grab sample of the deionized rinse water supply, collected in the field.

To evaluate the impact of field sampling activities on analytical precision (i.e., repeatability of results), field duplicate samples will be collected. One (1) duplicate sample of the decontamination verification rinseate will be

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collected for each sampling event. If requested, additional duplicate samples will be collected for QC confirmation by an independent laboratory.

4.2 Laboratory QA/QC Procedures

The analytical laboratory designated to analyze the samples shall use the approved methods, as specified in the SCQ. The laboratory will document the use and results of laboratory quality control samples and analyses. Laboratory samples for quality control (QC) may include:

- laboratory equipment blanks to detect residual contamination of analytical equipment that may affect analytical results.
- duplicate samples prepared in the laboratory to evaluate the precision (i.e., the ability to reproduce analytical results) achieved by the methods used).
- laboratory control and calibration verification samples (to verify calibration of the equipment).
- Matrix spike samples to evaluate analytical recovery rates.

All pertinent information concerning problems and conditions that may affect the validity of the analytical data must be clearly identified. In addition to laboratory QC and analytical data, information to be provided by the laboratory includes:

- Name of person receiving the sample
- Date and time of sample receipt
- Laboratory sample number (if different from field ID)
- Date and time of sample analysis
- Signature of the laboratory supervisor

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Sampling and Analysis Plan
Drummed HF Residue/Associated
Storage Areas NW Of Plant 4

0055

Conditions outside the control of the laboratory that could affect sample quality and validity of analytical results shall also be documented by the laboratory. These include items such as:

- discrepancies between shipping records, sample analytical requests, custody records and the sample shipments as received by the laboratory,
- sample containers and packaging problems, such as broken containers, loose lids, and broken custody seals.

Field duplicate samples shall be submitted that will not be identifiable from the sample labels or sample identification number. Field duplicate samples will be noted in the field sampling logbook for use in FEMP QA/QC review of analytical reports.

4.3 Sample Analysis Request/Chain-Of-Custody Procedures

Each sample container shall be labeled with the sample number and identification that is consistent with the Sample Analysis Request/Custody Record form. Prior to relinquishing possession of a sample, the person that collected the sample shall complete and sign a Sample Analysis Request/Custody Record. A complete record of custody transfer shall be maintained on the Sample Analysis Request/Custody Record form.

All samples taken to the FEMP Sample Processing Laboratory must be accompanied by the completed Sample Analysis Request/Custody Record form. An Off-Site Sample Analysis Request/Custody Transfer Record will be prepared and accompany samples to be sent off-site for laboratory analysis.

The laboratory conducting the analysis will be responsible for maintaining sample custody logs until samples are returned to the FEMP or disposed after obtaining FEMP approval. The Custody Records will document sample possession from the time

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Sampling and Analysis Plan
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Storage Areas NW Of Plant 4

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of collection through analysis by the laboratory. Records of any custody seals used on sample containers shall be maintained. The laboratory will document the condition of any custody seals on containers that they receive. Laboratories conducting analysis are required to provide the FEMP a copy of all completed laboratory custody records.

The completed sample Analysis Request/Custody Record, Off-Site Analysis Request/Custody Transfer Record, and laboratory custody forms will be signed and returned with the analytical report for the samples identified on the form(s). These documents will be filed in the FEMP RCRA HWMU Closure files for review by the OEPA and USEPA.

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5.0 HEALTH AND SAFETY

As discussed in Section 3.5 in the CPID, a Project/Task Specific Health and Safety Plan will be prepared to reflect site, area conditions, and health and safety requirements prior to conducting sampling. CPID Attachment B is a copy of the guidelines for preparing the Project/Task Specific Health and Safety Plan. All sampling activities shall be conducted in accordance with approved FEMP/FMPC procedures.

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Sampling and Analysis Plan
Drummed HF Residue/Associated
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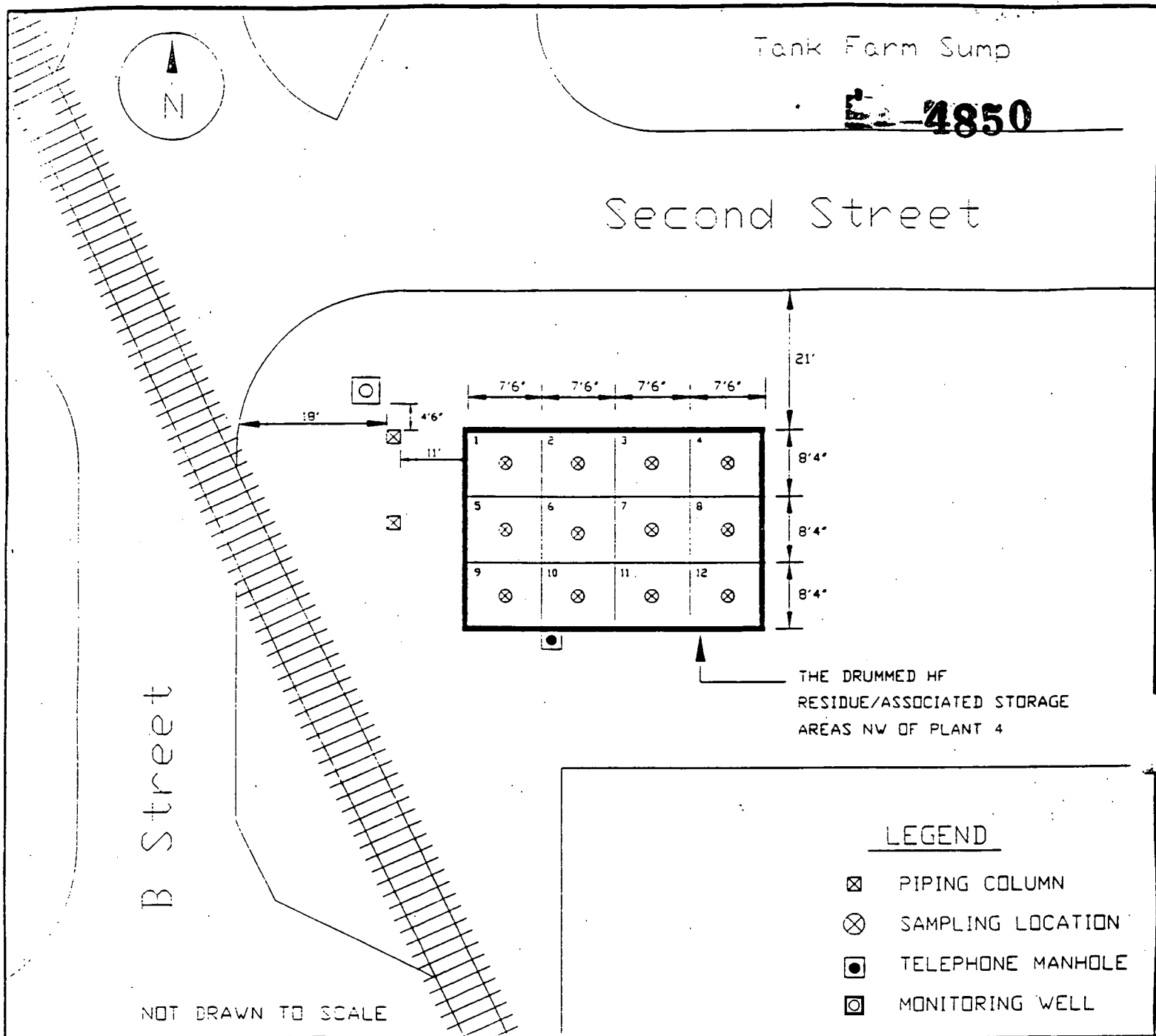


FIGURE A-1
PROPOSED HWMU SAMPLING LOCATIONS

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Sampling and Analysis Plan
Drummed HF Residue/Associated
Storage Areas NW Of Plant 4

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THE DRUMMED HF
RESIDUE/ASSOCIATED STORAGE
AREAS NW OF PLANT 4

Second Street

Second Street

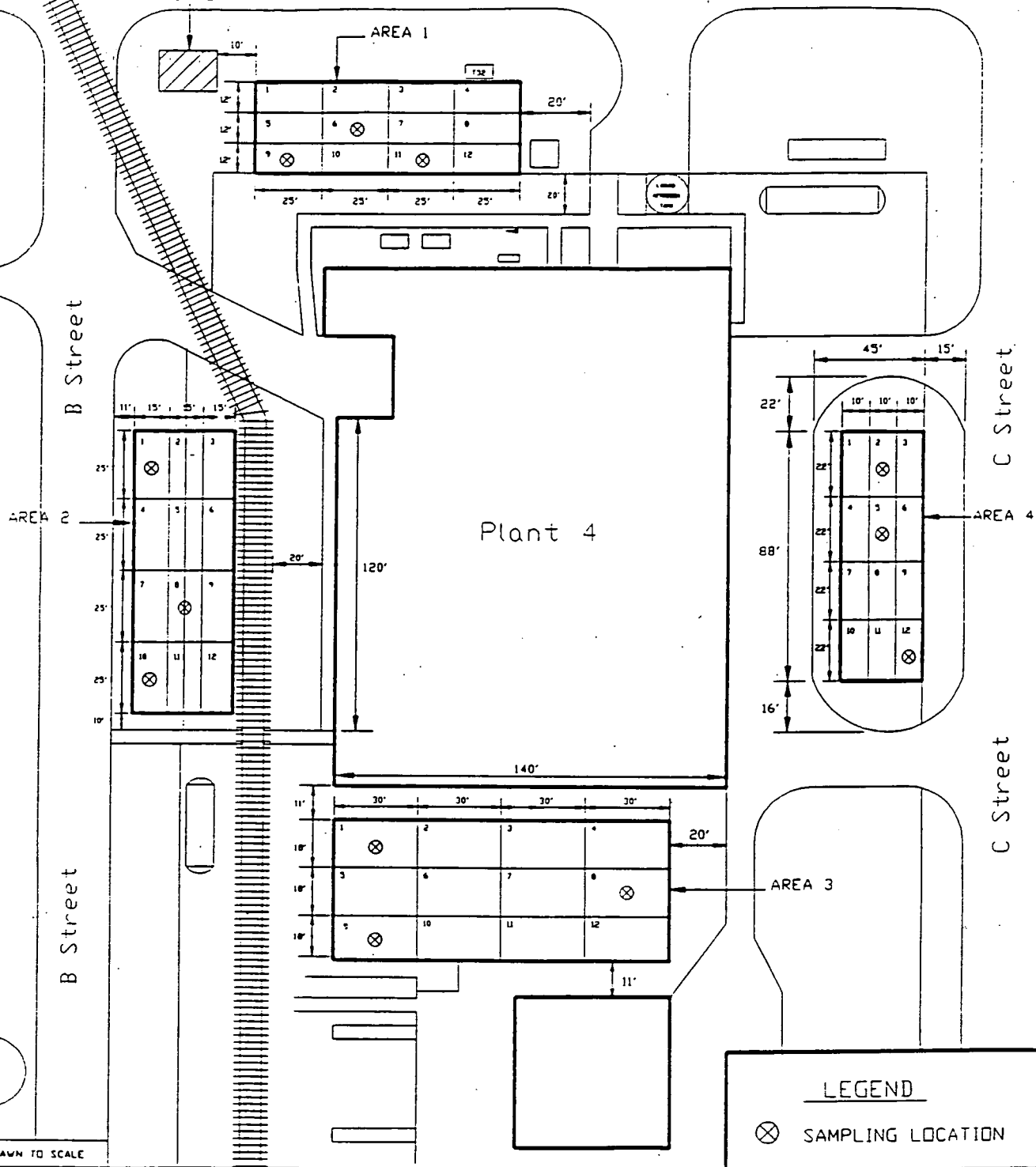


FIGURE A-2.

PROPOSED PRODUCTION AREA BACKGROUND SAMPLING LOCATIONS

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Sampling and Analysis Plan
Drummed HF Residue/Associated
Storage Areas NW Of Plant 4

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ATTACHMENT B
TO
CLOSURE PLAN INFORMATION AND DATA
DRUMMED HF RESIDUE/ASSOCIATED STORAGE AREAS NW OF PLANT 4
Revision 1
June, 1993

GUIDELINES FOR THE PREPARATION OF FMPC
PROJECT/TASK SPECIFIC HEALTH AND SAFETY PLANS
(APPENDIX II OF THE FMPC SITE HEALTH AND SAFETY PLAN, JUNE 1990)

PROJECT/TASK TITLE: _____
PREPARED BY: _____
DATE: _____

REVIEWED BY:

Centralized training: _____

Radiological Safety: _____

Industrial Hygiene and Safety: _____

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NOTE: This plan and associated permits shall be reviewed with each worker and be posted at the work site at all times. Review of all of the listed sections is required prior to work start.

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INTRODUCTION

A project/task specific health and safety plan is a complementary program element that aids in the elimination or effective control of anticipated safety and health hazards. The project/task health and safety plan shall include all basic requirements of the overall health and safety plan, but with close attention given to those characteristics unique to the particular project, task or job. For example, the project/task plan may outline the method of doing work in a confined space area, hazardous waste area, area containing hazardous materials or any area where there is the potential for exposure to employees.

Much of the information required to complete the plan may be provided on FEMP Work Permit Form No. 2939. However, the plan will allow for a complete job evaluation, health evaluation of the employee(s) performing the work and assure that personnel health and safety concerns are addressed prior to the start of the job/task.

The project/task health and safety plan must identify the hazards of each phase of the specific project/task/job and must be kept at the work site. All required permits shall be posted in the immediate work area. A job briefing shall be conducted prior to job start up and at any other time as deemed necessary to ensure that employees are aware of the project/task/job health and safety plan and its implementation. The supervisor in charge and Industrial, Radiological Safety and Training representatives shall perform periodic inspections of the job area to ensure that all known deficiencies are corrected prior to work start and during work performance.

NOTE: Examples are provided after each section, they are not meant to be realistic.

SECTION NO.

TITLE

- | | |
|----|--|
| 1 | History & Description of Building, Equipment, Area |
| 2 | Work Area Organization and Site Access Control |
| 3 | Task Activities/Work Plan |
| 4 | Hazard Assessments |
| 5 | Standard Operating Procedures (SOPs) |
| 6 | Education and Training |
| 7 | Medical Surveillance |
| 8 | Monitoring |
| 9 | Personnel Protective Equipment Requirements |
| 10 | Safety Equipment List |
| 11 | Decontamination Procedures |
| 12 | Emergency Plans |
| 13 | Amendments |

0065

SECTION NO. 1

History and Description of Building, Equipment, Area

This Section in its entirety address all known facts about the area where work will be performed. When completed, this section combined with job activities/work plan, should create an understanding of potential health and safety issues to be addressed at the work area.

A. Description of Building, Equipment, Area

Pertinent information about the building, equipment or area such as current disposition, name, manufacturers, location of work area, building construction, etc.

EXAMPLE: This is a 1000 gallon fiberglass tank buried approximately three (3) feet beneath the blacktop east of Building 46. The tank currently contains an unknown amount of methyl ethyl something. The tank was constructed in 1978 by Round Up Manufacturers and installed at the FEMP in January 1979. It has been in continuous use since that time and will be taken out of service 10 days before this project starts.

B. Process Performed or Activities Conducted in the Area

Describe activities performed in the building, use of the equipment, types of material processed, etc.

EXAMPLE: Building 46 is a vehicle and maintenance supply storage facility. The north bay of this three bay building houses emergency vehicles. No radioactive or hazardous

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substances have been processed in this building or area.

C. Unusual Features

Include information pertaining to conditions which may present a hazard to personnel such as powerlines, material storage, equipment location, buried lines/pipes, etc.

EXAMPLE: There is a drainage ditch approximately 50 feet east of the proposed work site. The flow in the drainage ditch is not controlled.

An underground high voltage line is believed to be located in this area connecting the electric substation with Building 46.

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TASK SPECIFIC HEALTH & SAFETY QUESTIONNAIRE (cont.)

SECTION NO. 2

Work Area Organization and Site Access Control

This section clearly identifies the designated work area, control zones or restricted areas where work will be performed; name(s) of supervisor personnel; name(s) of personnel performing work/activities; names of support personnel required to complete task. Site entry and exiting protocol should also be identified.

EXAMPLE: An exclusion zone will be established around the proposed tank excavation area. This area measures approximately 25' X 25'. The exclusion zone shall be marked with barrier tape.

Jo Smyth, Badge No. 0000, will be the supervisor in charge of this project. Tiny Tim, Badge No. 0000, Chicken Little, Badge 000, and Hairy Wolf, Badge No. 0000, will perform the tank sampling, excavation and removal activities.

Entry into the exclusion zone will be limited to the above listed individuals, Industrial Hygiene and Radiological Safety Technicians, Safety and Fire Inspectors and Utility Engineers. Anyone else desiring entry must first be approved by the supervisor in charge.

Personnel exiting the area must be monitored to assure they are free of contaminants.

SECTION NO. 3

Task Activities/Work Plan

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State task activity that will be performed and anticipated work plan.

TASK SPECIFIC HEALTH & SAFETY QUESTIONNAIRE (cont.)

EXAMPLE: The contents of the tank must be sampled, the blacktop and aggregate fill on top and around the tank will be removed and boxed for shipment, all piping will be disconnected and removed, the tank will be removed and the excavation filled with new aggregate materials.

TASK SPECIFIC HEALTH & SAFETY QUESTIONNAIRE (cont.)SECTION NO. 4 Hazard Assessments

General categories of hazards that may be present at the work site should be listed. MSDSs must be included for any identified hazardous substance. It is prudent to assume that any identified hazard is present until a characterization has proven otherwise. Provisions should be made to properly protect all individuals that have the potential for exposure from the suspected or identified hazardous substances. Specific WEMCO work permits may be required and should be prepared in accordance with Site Procedure 516.

DISCUSSION: List each suspected or identified hazardous substance, condition or waste. Attach copy of the applicable MSDS to the Health and Safety Plan. When identified, the appropriate permit should be completed and a copy attached to the Project/Task Specific Health and Safety Plan.

SECTION NO. 5 Standard Operating Procedures (SOPs)

Some project/tasks will require that special SOPs be prepared or existing procedures be referenced to conduct the work according to specified guidelines.

DISCUSSION: If no procedure exists to cover the proposed work, prepare one to address the project/task. If procedures exist, list the applicable document number and full title.

SECTION NO.6 Education and Training

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Employees shall not engage in field activities until they

TASK SPECIFIC HEALTH & SAFETY QUESTIONNAIRE (cont.)

have been trained to a level commensurate with their job function, responsibilities and with the degree of anticipated hazards. The amount of training is based on worker categories.

A. Worker Category

1. General Site Worker - 40 hours of SARA/OSHA instruction plus 24 hours of field experience.
2. Occasional Site Worker - 24 hours of SARA/OSHA instruction plus 8 hours of field experience.
3. Workers Regularly on Site But Not in Danger of Exposure - 24 hours of SARA/OSHA instruction plus 8 hours of field experience.
4. Management or Supervisor - Same as 1, 2, or 3 depending on category of work being supervised plus 8 hours of specialized training.
5. Visitors - Are not permitted within exclusion zones unless they have completed the training requirements specified in No. 1 through 4.

- B. A safety meeting for all employees involved in hazardous material/waste operations. These meetings shall be held prior to task start, daily during work periods, when there is a change in work activities or implementation of safety plan amendments. Meetings shall be documented and will become a permanent element of this task specific health and safety plan. Subjects to be covered shall include:

TASK SPECIFIC HEALTH & SAFETY QUESTIONNAIRE (cont.)

- 0 Work operations
- 0 Personnel protective equipment
- 0 air monitoring data
- 0 hazard communication
- 0 hearing conservation
- 0 monitoring results
- 0 decontamination procedures
- 0 task organization
- 0 physical stress
- 0 emergency procedures
- 0 communications
- 0 general safety
- 0 housekeeping

A detailed listing of subjects can be found in the site Health and Safety Plan Appendix II.

SECTION NO. 7 Medical Surveillance (To be completed by Medical Services)

Worker selection is based on an evaluation by a qualified licensed physician having knowledge of the specific tasks to be performed and the exposure potential as it relates to the worker. FEMP form HR 3162 is used for the purpose.

SECTION NO. 8 Monitoring (To be completed by IRS&T)

- A. State the monitoring protocol and action levels for the contaminants involved in each work activity.
- B. State each type of instrument to be utilized and coordinate with the type of contaminate to be monitored.

TASK SPECIFIC HEALTH & SAFETY QUESTIONNAIRE (cont.)SECTION NO. 9 Personnel Protective Equipment Requirements

State the required level of protection for each activity, task or hazardous substance as identified in the hazard assessment.

SECTION NO. 10 Safety Equipment List

State each piece of safety equipment and the protocol for utilization. This section should create the "shopping list" of safety supplies or equipment available for use by workers.

EXAMPLES: Personnel Protective Equipment (PPE), Fire Extinguishment, Decontaminating Materials, Communication Devices, Barrier Tape, Etc.

SECTION NO. 11 Decontamination Procedures

Address decontamination of personnel and each piece of equipment as a step by step procedure for both chemical and radiological contaminants.

Include level of protection to be utilized during decontamination process, solutions, stations and dispensation of fluids, disposable and other waste.

SECTION NO. 12 Emergency Plans

Emergency plans shall include methods of reporting emergencies or abnormal conditions; evacuation procedures; accountability; types of alarms, etc.

TASK SPECIFIC HEALTH & SAFETY QUESTIONNAIRE (cont.)SECTION NO. 13 Amendments

Statements shall be made as follows:

- A. This Project/Task Specific Health and Safety Plan is based on information available at the time of preparation. Unexpected conditions may arise which require reassessment of safety procedures. It is important that personnel protective measures be thoroughly assessed by the supervisor in charge and IRS&T representative prior to and during the planned task activities. Unplanned activities and/or changes in the hazard status require a review of and may require changes in this plan.

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TASK SPECIFIC HEALTH & SAFETY QUESTIONNAIRE (cont.)

- B. Changes in the anticipated hazard status or unplanned activities are to be submitted as an amendment to this Project/Task Specific Health and Safety Plan.
- C. Amendments must be approved by the plan author and IRS&T prior to implementation of the amendment.

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**ATTACHMENT C
TO
CLOSURE PLAN INFORMATION AND DATA
DRUMMED HF RESIDUE/ASSOCIATED STORAGE AREAS NW OF PLANT 4
Revision 1
June, 1993**

PHOTOGRAPH DELINEATING HWMU BOUNDARY

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ATTACHMENT D
TO
CLOSURE PLAN INFORMATION AND DATA
DRUMMED HF RESIDUE/ASSOCIATED STORAGE AREAS NW OF PLANT 4
Revision 1
June, 1993

ANALYTICAL RESULTS OF DRUMMED HF RESIDUES

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WESTINGHOUSE MATERIALS COMPANY OF OHIO
FMPC LABORATORIES
RESULTS OF ANALYSES

Customer Name: PLT.4 Chain of Custody: Y
Customer Sample Number: DR#-1 Lab Sample Number: 891012-009
Date Sample Received: 12-OCT-1989 Date Sample Completed: 4-DEC-1989
Date Sampled: 12-OCT-1989 Sampled By: NB
Material Description: MISCELLANEOUS SAMPLES Req. Number:

Activity Number	Preparation Procedure No.	Analysis Procedure No.	Analysis	Result	Units	Analyst	Date Completed
1055	1054	1055	Ag - GFAA AnL INORG	<1.0	mg/L	LA WALLER	1-DEC-1989
1056	1054	1056	As - GFAA AnL INORG	<1.0	mg/L	AF VOLESKY	14-NOV-1989
1059	1054	1059	Hg - Cold Vapor AA AnL INORG	<0.1	mg/L	JE REILMAN	9-NOV-1989
1061	1054	1061	Se - GFAA AnL INORGB	<0.1	mg/L	AF VOLESKY	30-NOV-1989
1065	1054	1065	Ba - ICP AnL INORG	<25	mg/L	GJ KUNZE	9-NOV-1989
	1054	1065	Cd - ICP AnL INORG	<0.2	mg/L	GJ KUNZE	9-NOV-1989
	1054	1065	Cr - ICP AnL INORG	<1.0	mg/L	GJ KUNZE	9-NOV-1989
1	1054	1091	Pb - GFAA AnL INORG	<1.0	mg/L	AF VOLESKY	1-NOV-1989

WESTINGHOUSE MATERIALS COMPANY OF OHIO
FMPC LABORATORIES
RESULTS OF ANALYSES

Customer Name: PLT.4 Chain of Custody: Y
Customer Sample Number: DR#-1 Lab Sample Number: 891012-009
Date Sample Received: 12-OCT-1989 Date Sample Completed:
Date Sampled: 12-OCT-1989 Sampled By: NB
Material Description: MISCELLANEOUS SAMPLES Req. Number:

Activity Number	Preparation Procedure No.	Analysis Procedure No.	Analysis	Result	Units	Analyst	Date Completed
3033		3032	pH - Electrode AnL FC	2.2	pH	JJ STOECKEL	17-OCT-1989

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WESTINGHOUSE MATERIALS COMPANY OF OHIO
FMPC LABORATORIES
RESULTS OF ANALYSES

Customer Name: PLT.4 Chain of Custody: Y
Customer Sample Number: DR#-7 Lab Sample Number: 891012-010
Date Sample Received: 12-OCT-1989 Date Sample Completed: 4-DEC-1989
Date Sampled: 12-OCT-1989 Sampled By: NB
Material Description: MISCELLANEOUS SAMPLES Req. Number:

Activity Number	Preparation Procedure No.	Analysis Procedure No.	Analysis	Result	Units	Analyst	Date Completed
1055	1054	1055	Ag - GFAA AnL INORG	<1.0	mg/L	LA WALLER	1-DEC-1989
1056	1054	1056	As - GFAA AnL INORG	<1.0	mg/L	AF VOLESKY	14-NOV-1989
1059	1054	1059	Hg - Cold Vapor AA AnL INORG	<0.1	mg/L	JE REILMAN	9-NOV-1989
1061	1054	1061	Se - GFAA AnL INORGB	<0.1	mg/L	AF VOLESKY	30-NOV-1989
1065	1054	1065	Ba - ICP AnL INORG	<25	mg/L	GJ KUNZE	9-NOV-1989
	1054	1065	Cd - ICP AnL INORG	<0.2	mg/L	GJ KUNZE	9-NOV-1989
	1054	1065	Cr - ICP AnL INORG	1.0	mg/L	GJ KUNZE	9-NOV-1989
1091	1054	1091	Pb - GFAA AnL INORG	<1.0	mg/L	AF VOLESKY	1-NOV-1989

WESTINGHOUSE MATERIALS COMPANY OF OHIO
FMPC LABORATORIES
RESULTS OF ANALYSES

Customer Name: PLT.4 Chain of Custody: Y
Customer Sample Number: DR#-7 Lab Sample Number: 891012-010
Date Sample Received: 12-OCT-1989 Date Sample Completed: 18 OCT-1989
Date Sampled: 12-OCT-1989 Sampled By: NB
Material Description: MISCELLANEOUS SAMPLES Req. Number:

Activity Number	Preparation Procedure No.	Analysis Procedure No.	Analysis	Result	Units	Analyst	Date Completed
3033		3033	pH - Electrode AnL PC	2.5	pH	JJ STOECKEL	17-OCT-1989

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WESTINGHOUSE MATERIALS COMPANY OF OHIO
FMPC LABORATORIES
RESULTS OF ANALYSES

Customer Name: PLT.4 Chain of Custody: Y
Customer Sample Number: DR#-11 Lab Sample Number: 891012-011
Date Sample Received: 12-OCT-1989 Date Sample Completed: 4-DEC-1989
Date Sampled: 12-OCT-1989 Sampled By: NB
Material Description: MISCELLANEOUS SAMPLES Req. Number:

Activity Number	Preparation Procedure No.	Analysis Procedure No.	Analysis	Result	Units	Analyst	Date Completed
1055	1054	1055	Ag - GFAA AnL INORG	<1.0	mg/L	LA WALLER	1-DEC-1989
1056	1054	1056	As - GFAA AnL INORG	<1.0	mg/L	AF VOLESKY	14-NOV-1989
1059	1054	1059	Hg - Cold Vapor AA AnL INORG	<0.1	mg/L	JE REILMAN	9-NOV-1989
1061	1054	1061	Se - GFAA AnL INORGB	<0.1	mg/L	AF VOLESKY	30-NOV-1989
1065	1054	1065	Ba - ICP AnL INORG	<25	mg/L	GJ KUNZE	13-NOV-1989
	1054	1065	Cd - ICP AnL INORG	<0.2	mg/L	GJ KUNZE	13-NOV-1989
	1054	1065	Cr - ICP AnL INORG	<1.0	mg/L	GJ KUNZE	13-NOV-1989
1071	1054	1091	Pb - GFAA AnL INORG	<1.0	mg/L	AF VOLESKY	1-NOV-1989

WESTINGHOUSE MATERIALS COMPANY OF OHIO
FMPC LABORATORIES
RESULTS OF ANALYSES

Customer Name: PLT.4 Chain of Custody: Y
Customer Sample Number: DR#-11 Lab Sample Number: 891012-011
Date Sample Received: 12-OCT-1989 Date Sample Completed: 17-OCT-1989
Date Sampled: 12-OCT-1989 Sampled By: NB
Material Description: MISCELLANEOUS SAMPLES Req. Number:

Activity Number	Preparation Procedure No.	Analysis Procedure No.	Analysis	Result	Units	Analyst	Date Completed
3033		3033	pH - Electrode AnL PC	2.6	pH	JJ STOECKEL	17-OCT-1989

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WESTINGHOUSE MATERIALS COMPANY OF OHIO
FMPC LABORATORIES
RESULTS OF ANALYSES

Customer Name: PLT.4 Chain of Custody: Y
Customer Sample Number: DR#-20 Lab Sample Number: 891012-012
Date Sample Received: 12-OCT-1989 Date Sample Completed: 4-DEC-1989
Date Sampled: 12-OCT-1989 Sampled By: NB
Material Description: MISCELLANEOUS SAMPLES Req. Number:

Activity Number	Preparation Procedure No.	Analysis Procedure No.	Analysis	Result	Units	Analyst	Date Completed
1055	1054	1055	Ag - GFAA AnL INORG	<1.0	mg/L	LA WALLER	1-DEC-1989
1056	1054	1056	As - GFAA AnL INORG	<1.0	mg/L	AF VOLESKY	14-NOV-1989
1059	1054	1059	Hg - Cold Vapor AA AnL INORG	<0.1	mg/L	JE REILMAN	9-NOV-1989
1061	1054	1061	Se - GFAA AnL INORGB	<0.1	mg/L	AF VOLESKY	30-NOV-1989
1065	1054	1065	Ba - ICP AnL INORG	<25	mg/L	GJ KUNZE	9-NOV-1989
	1054	1065	Cd - ICP AnL INORG	<0.2	mg/L	GJ KUNZE	9-NOV-1989
	1054	1065	Cr - ICP AnL INORG	<1.0	mg/L	GJ KUNZE	9-NOV-1989
1091	1054	1091	Pb - GFAA AnL INORG	<1.0	mg/L	AF VOLESKY	1-NOV-1989

WESTINGHOUSE MATERIALS COMPANY OF OHIO
FMPC LABORATORIES
RESULTS OF ANALYSES

Customer Name: PLT.4 Chain of Custody: Y
Customer Sample Number: DR#-20 Lab Sample Number: 891012-012
Date Sample Received: 12-OCT-1989 Date Sample Completed:
Date Sampled: 12-OCT-1989 Sampled By: NB
Material Description: MISCELLANEOUS SAMPLES Req. Number:

Activity Number	Preparation Procedure No.	Analysis Procedure No.	Analysis	Result	Units	Analyst	Date Completed
3033		3032	pH - Electrode AnL PC	2.5	pH	JJ STOECKEL	17-OCT-1989

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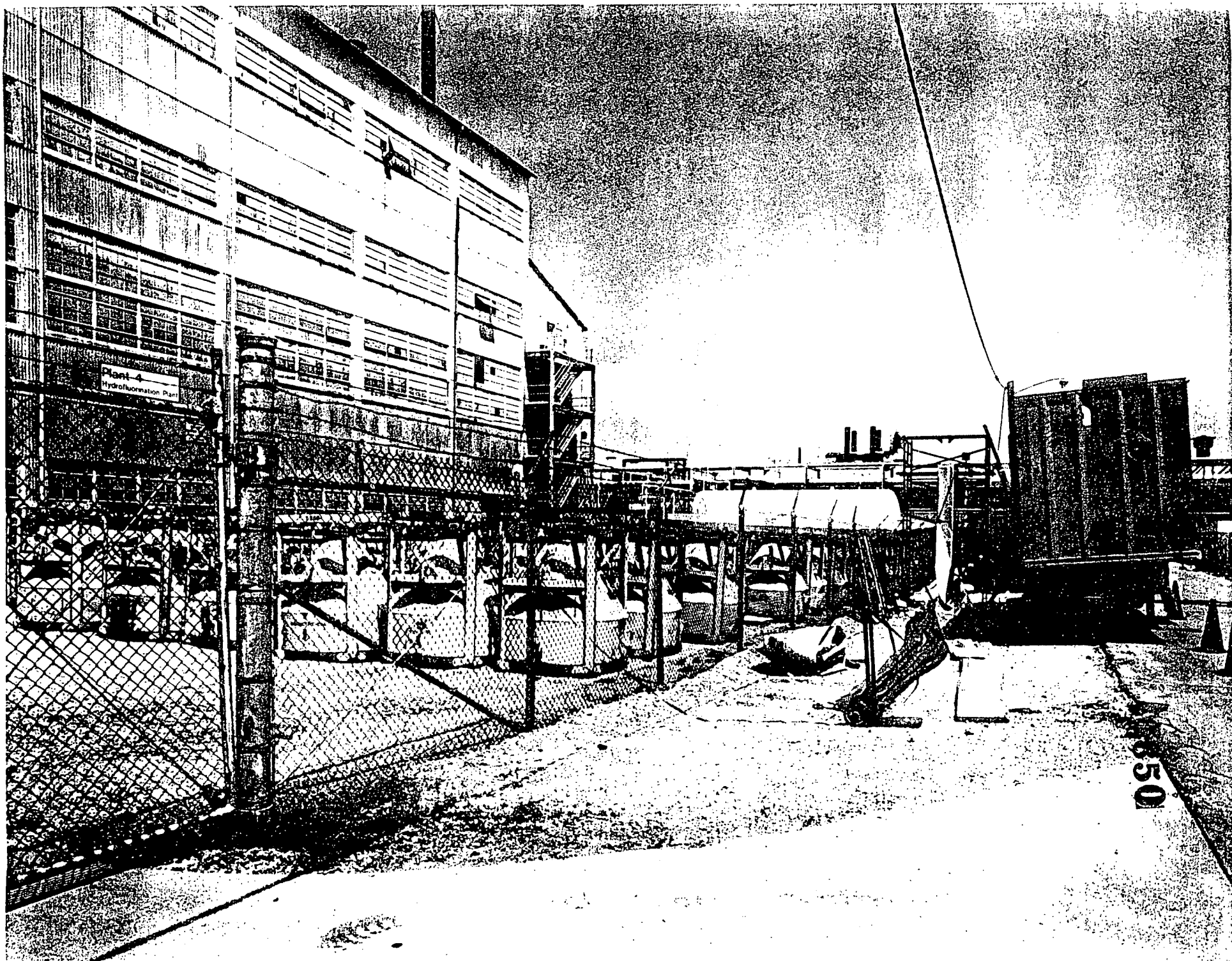
ATTACHMENT E
TO
CLOSURE PLAN INFORMATION AND DATA
DRUMMED HF RESIDUE/ASSOCIATED STORAGE AREAS NW OF PLANT 4
Revision 1
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SAMPLE LOCATION PHOTOGRAPHS

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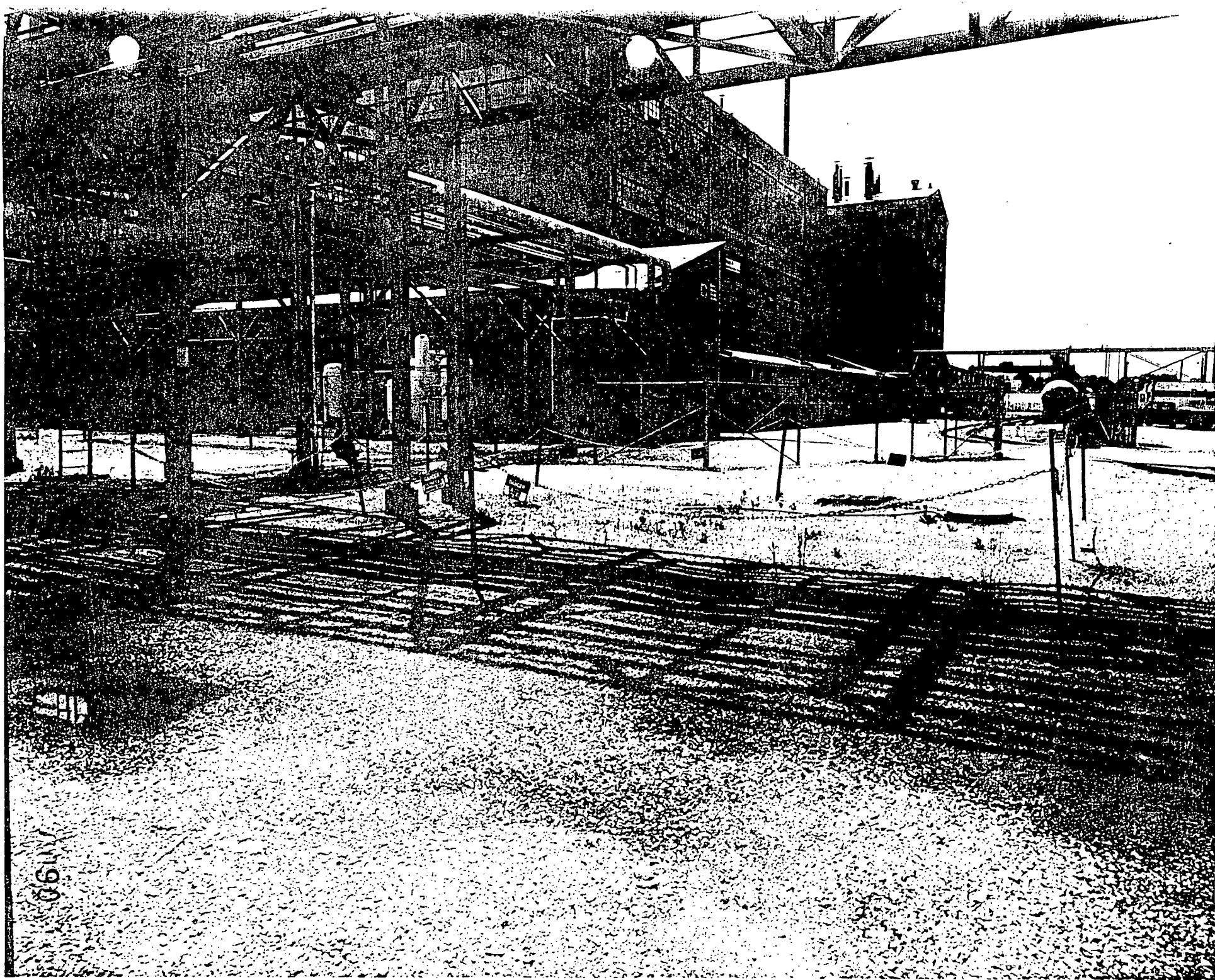
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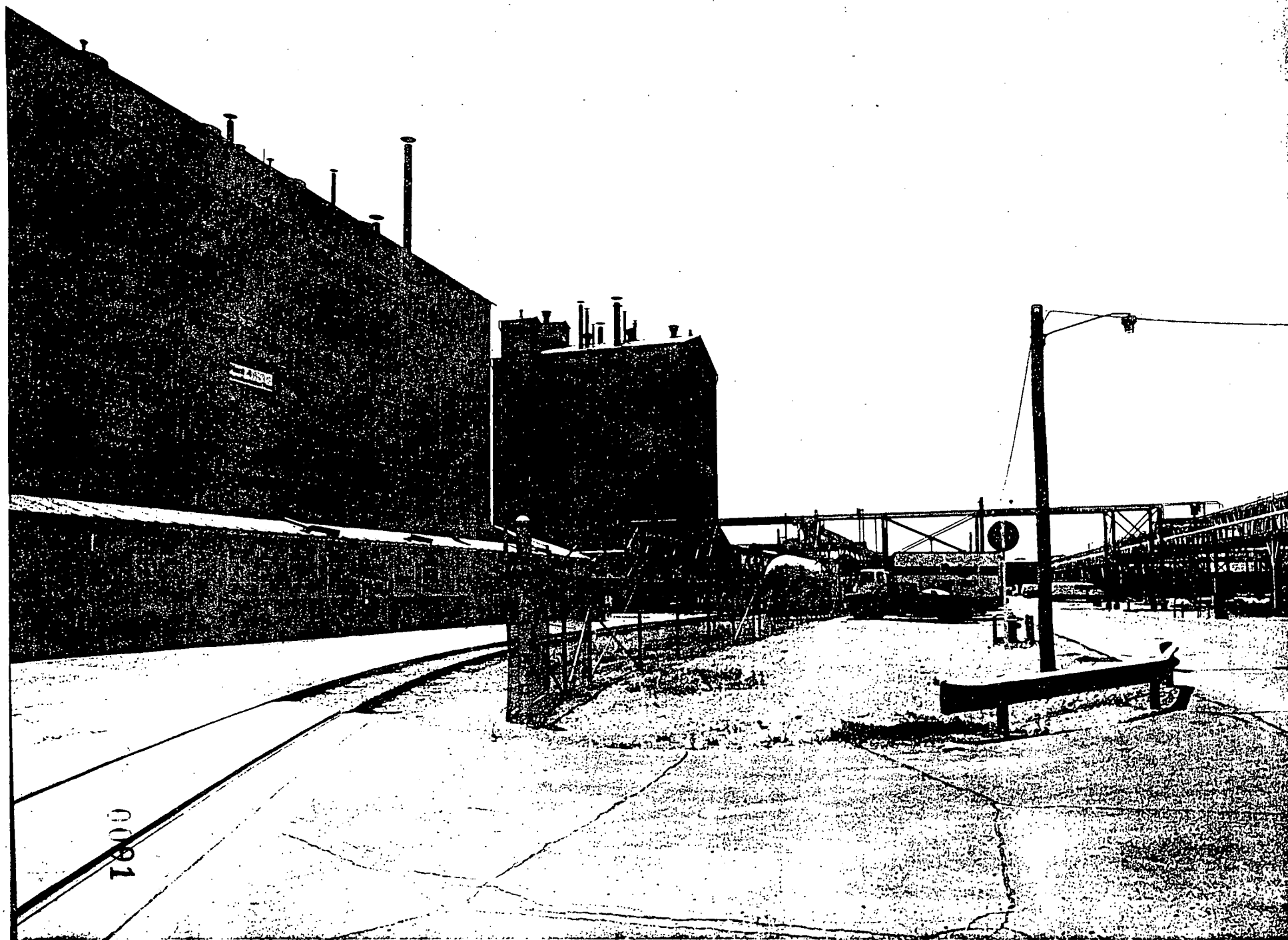
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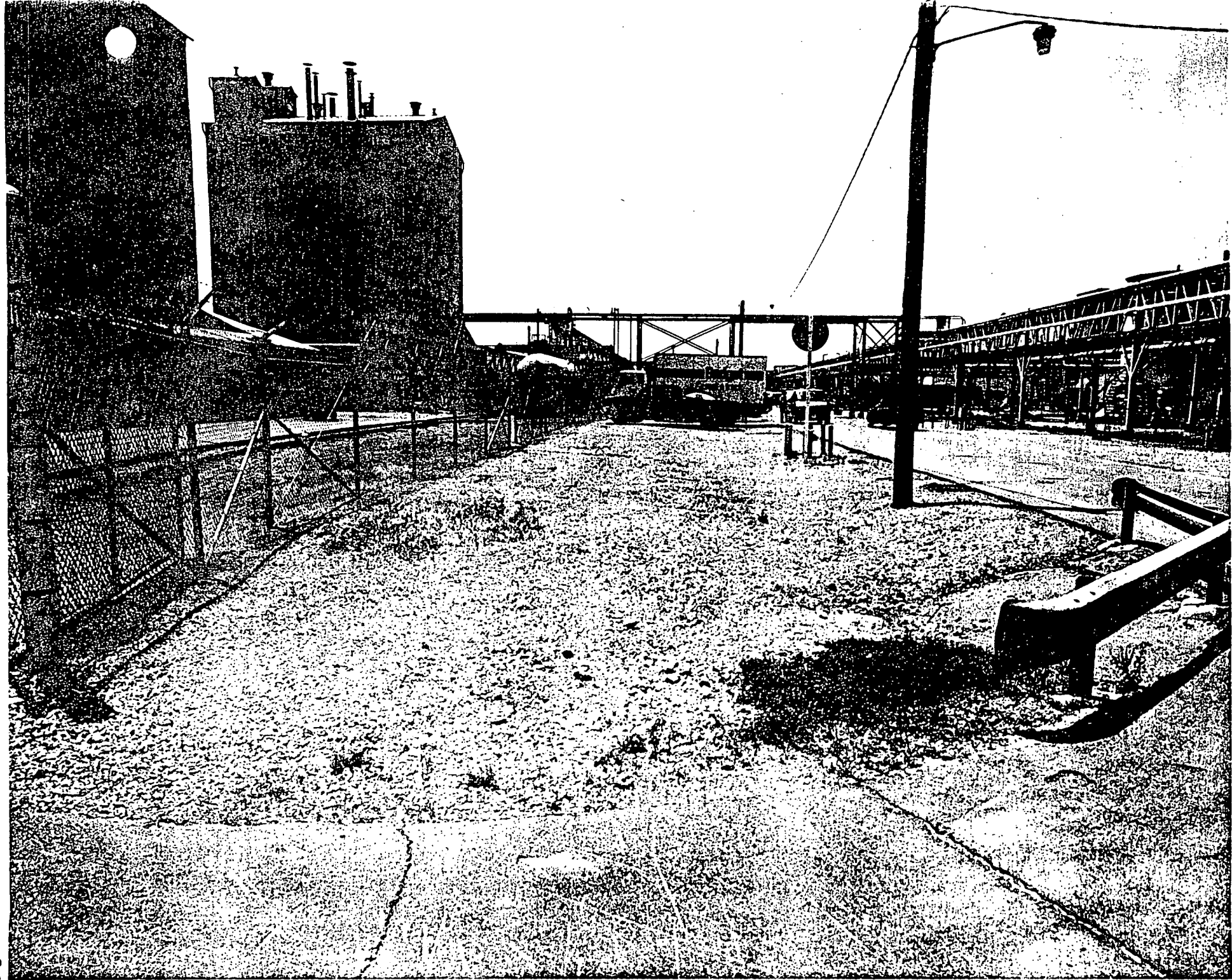
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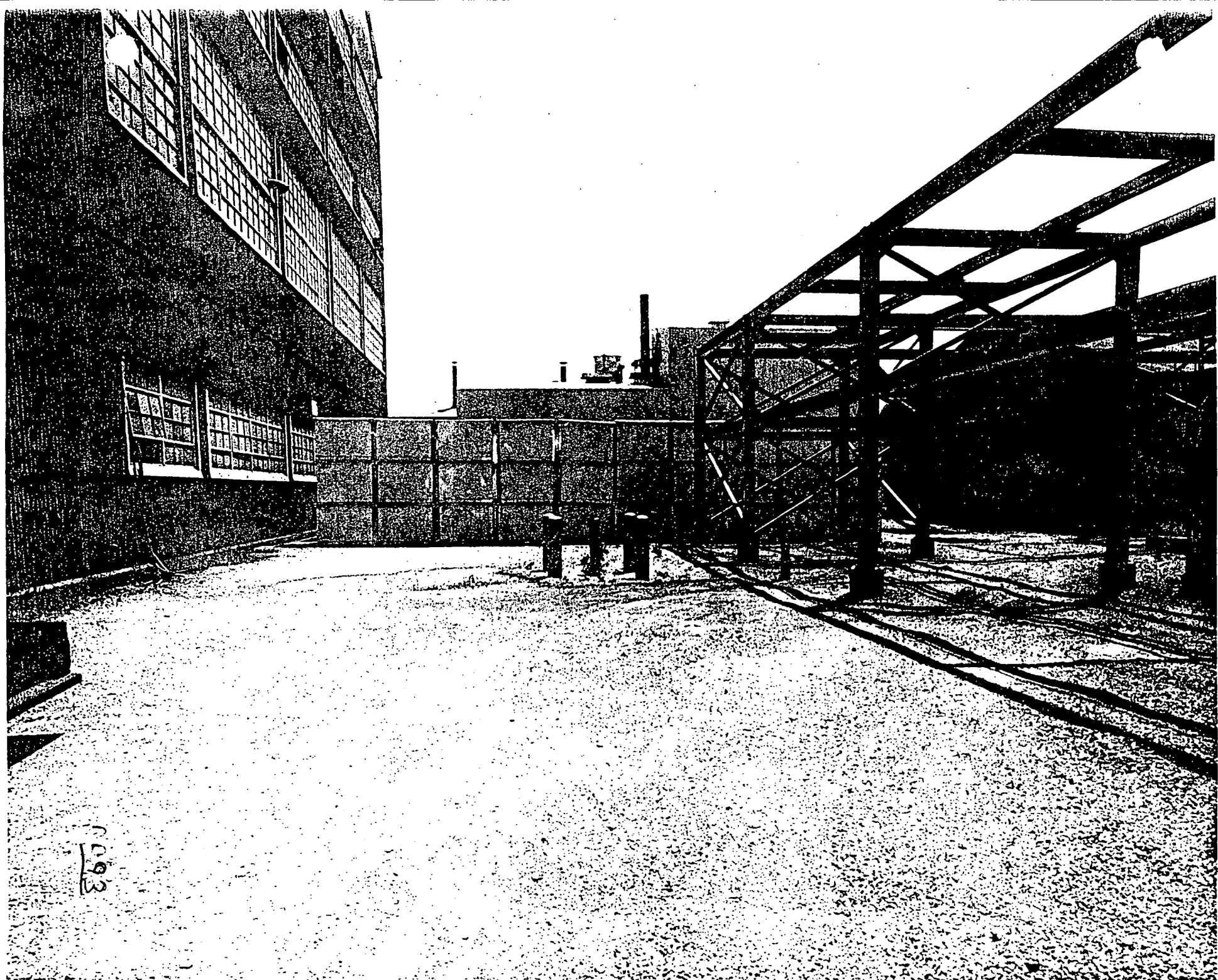




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